

# 2009 Injury Data Book

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## Fatal and Nonfatal Injuries Among Massachusetts Residents



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## Purpose of Report

This publication is intended as a reference document. It provides basic counts and rates on a broad range of injury topics using death data and data submitted by Massachusetts acute care hospitals. Highlighted in the report are fall-related injuries, motor vehicle injuries, traumatic brain injuries, poisonings/overdoses, suicide and self-inflicted injuries, and homicide and assault-related injuries by state, county and Community Health Network Area (CHNA).

The Injury Surveillance Program publishes additional data tables, reports and bulletins on selected injury causes on-line at:

<http://www.mass.gov/dph/isp>

## Resources

This report was prepared by the Injury Surveillance Program, Massachusetts Department of Public Health. Publication of the report was supported by cooperative agreement #U17/CE002009 from the Centers for Disease Control and Prevention (CDC). Its contents are the responsibility of the authors and do not necessarily represent the official views of the CDC.

To obtain a hard copy of this report or to request custom data reports, please contact the Injury Surveillance Program at:

Phone: 617-624-5648 or 617-624-5665

E-mail: [MDPH-ISP@state.ma.us](mailto:MDPH-ISP@state.ma.us)

or write to us at:

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Selected injury data are also available from the Department's free query system, MassCHIP.

For more information about downloading MassCHIP, visit their website at:

<http://masschip.state.ma.us/>

Additional Department publications and materials can be accessed on-line at:

<http://www.state.ma.us/dph/pubstats.htm>

For information on how to prevent injuries, contact the Injury Prevention and Control Program at 617-624-5544, or on-line at:

<http://www.mass.gov/dph/fch/injury>

## Technical Notes

### **Injury Parameters**

Injuries may be classified according to the external cause of the injury (e.g. a fall, drowning) and intent (e.g. unintentional, self-inflicted) or by the nature of the injury (e.g. laceration, fracture) and anatomical location (e.g. head, hip).

In this report, injuries are classified by cause and intent using the International Classification of Diseases (ICD) system. Current standards use ICD-10 to classify fatal injuries and ICD-9 external-cause-of-injury (E-codes) to classify nonfatal injuries. Please see appendices A and B for the morbidity and mortality code groupings used in this report.

### **Data Sources and Inclusion Criteria**

#### **Injury Fatalities**

Source: Registry of Vital Records and Statistics, MA Department of Public Health.

An injury death is defined as:

any death with an ICD-10 code of V01-Y36, Y40-Y89, U01-U03 in the underlying cause field. This includes Adverse Effects of Medical Care and Drugs.

#### **Nonfatal Injury-Related Hospital Discharges**

Source: MA Inpatient Hospital Discharge Database, MA Division of Health Care Finance and Policy.

An injury-related hospital discharge case is defined as:

any case having an ICD9-CM Nature of Injury Code of: 800-908, 9090-9092, 9094, 9099, 910-994, 99550-99559, 99580-99585, assigned to any of the ICD9 diagnosis fields.

Injury-related hospital discharge cases transferred to another acute care hospital or who subsequently died in the hospital were excluded from these analyses.

#### **Nonfatal Injury-Related Observation Stays**

Source: MA Outpatient Observation Stay Database, MA Division of Health Care Finance and Policy.

This database contains cases where a hospital bed is used for observation. Such cases are *not* included in the hospital discharge database.

An injury-related observation stay is defined as:

any case having an ICD9-CM Nature of Injury Code of: 800-908, 9090-9092, 9094, 9099, 910-994, 99550-99559, 99580-99585, assigned to any of the ICD9 diagnosis fields.

Injury-related observation stay cases who subsequently died were excluded from these analyses.

## Technical Notes

### Nonfatal Injury-Related Emergency Department (ED) Visits

Source: MA Outpatient Emergency Department Discharge Database, MA Division of Health Care Finance and Policy.

This database contains individuals discharged from any acute care emergency department in Massachusetts. These cases are *not* included in the hospital discharge or observation stay databases.

An emergency department injury-related case is defined as:

any case having an ICD9-CM Nature of Injury Code of: 800-908, 9090-9092, 9094, 9099, 910-994, 99550-99559, 99580-99585, assigned to any of the ICD9 diagnosis fields.

Patients who died in the emergency department or were dead-on-arrival (DOA) were *not* included in these analyses.

### Population Data Source

National Center for Health Statistics. Postcensal estimates of the resident population of the United States for July 1, 2000-July 1, 2009, by year, county, age, bridged race, Hispanic origin, and sex (Vintage 2009). Prepared under a collaborative arrangement with the U.S. Census Bureau; released June 20, 2010. Available from:

[http://www.cdc.gov/nchs/nvss/bridged\\_race.htm](http://www.cdc.gov/nchs/nvss/bridged_race.htm)

### Massachusetts Residency

Analyses for *injury deaths* include Massachusetts residents who died in or out-of-state; out-of state residents who died in Massachusetts are not included.

Analyses of *nonfatal injuries* include Massachusetts residents treated in a Massachusetts acute care hospital. Residency is based on patient's state, city/town and ZIP code. Massachusetts residents treated at out-of-state hospitals and non-Massachusetts residents were *not* included.

### External Cause of Injury (E-Code) Rates

In hospital discharge data, 94.6% of cases for which one of the diagnostic fields was coded as an injury had an external cause of injury code provided. In observation stay data the percentage was 76.6%, and in emergency department discharge data, the percentage was 99.1%. Overall, E-Codes were assigned to 98.5% of all injury-related cases.

### Data Limitations and Exclusions

Limitations of Small Numbers: Cells in some tables contain small numbers. Rates and proportions based on less than 5 deaths and less than 7 nonfatal injuries (based on MA Division of Health Care, Finance, and Policy guidelines) are suppressed. Rates based upon small numbers (<20) should be interpreted cautiously as rates can fluctuate greatly from year to year with even a small increase or decrease in the number of cases.

Exclusions: Due to data quality issues, the external cause of injury codes (E-Codes) for two hospitals were excluded from all ED analysis between 2002 and 2007. Total injury counts presented in this report include primary diagnostic codes for these hospitals, but associated diagnostic codes have been excluded.

## Technical Notes

### Rates

All rates reported (i.e., crude, age-adjusted, and age-specific) are per 100,000 individuals.

#### **Crude Rate**

The crude rate represents the number of health events occurring in a specified population over a specified time period.

$$\text{Crude Rate} = \frac{(\# \text{ of resident injury cases in a year})}{(\text{resident population for that year})} \times 100,000$$

#### **Age-Specific Rate**

A rate for a specified age group is calculated by dividing the actual number of cases in a given year for a specific age group by the population in that age group for that year. The numerator (number of cases) and the denominator (population) refer to the same age group. For example:

$$\text{Age-specific Rate (for ages 25-34)} = \frac{(\# \text{ of injury cases among residents, ages 25-34 in a given year})}{(\text{population of residents, ages 25-34 in that year})} \times 100,000$$

#### **Age-Adjusted Rate**

Age-adjusted rates are designed to minimize distortions created by different age distributions when comparing rates in different subpopulations or across time or geographic areas. Age-adjusted rates are calculated by weighting the age-specific rates for a given year by the age distribution of a standard population. The weighted age-specific rates are then added to produce the adjusted rate for all ages combined.

### Average Annual Percent Change (AAPC)

The Average Annual Percent Change (AAPC) used in the trend tables is a measure of the change in rates over a specified time period. The Joinpoint Regression Program was used to calculate AAPCs and whether they were statistically significant. More information about the Joinpoint Regression Program can be found at:

<http://surveillance.cancer.gov/joinpoint/>

### Tests for Statistical Significance

Tests for statistical significance were only used in the JoinPoint analysis of trend data, i.e. changes in rates over time. Tests of statistical significance were not used in the comparison of rates by gender, age group and geographic area. The terms "higher", "lower" and "highest" are used as descriptive terms in comparisons of rates by gender, age group and geographic area and are not based on statistical tests.

## Injury Classifications

Injuries are classified according to specific codes in the International Classification of Diseases (ICD) Manual. These codes provide information on the “intent” of the injury (e.g., assault-related, intentionally self-inflicted, unintentional), “cause” of the injury, (e.g., fall or motor vehicle crash) and the “nature and anatomic location” of the injury (e.g., multiple fractures involving skull or face, dislocation of hip).

### Intent of Injury<sup>1</sup>

- Unintentional (“Accidental”)
- Suicide/Self-inflicted
- Homicide/Assault-related
- Other/Legal
- Undetermined Intent
- Adverse Effects

### External Cause of Injury

(Examples)

- Fall
- Firearm
- Poisoning/Drug overdose
- Motor vehicle
- Fire/burn
- Drowning
- Cut/pierce
- Machinery
- Struck by or against an object
- Suffocation/hanging

### Nature and Anatomical Location of Injury

(Examples)

- Fracture of skull
- Open wound to the chest
- Sprain to ankle
- Dislocation to shoulder
- Internal injury to abdomen
- Burn to upper back
- Crushing injury of forearm
- Foreign body in trachea

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<sup>1</sup> Unintentional injuries refer to those for which there was no intent to injure or harm oneself or another person. Unintentional intent is sometimes referred to as “accidental”. However, we typically do not use this term since injuries are not “random” or chance events; they are ***predictable and preventable***.

The term “suicide” refers to *completed* or fatal suicides. Nonfatal self-inflicted injuries include both suicide attempts and other self-injurious behavior, such as cutting or burning oneself, which may not be suicidal. The ICD-9-CM codes used to classify self-inflicted injuries currently do not distinguish between different types of self-inflicted injuries.

Homicide is defined as any death purposefully inflicted by one person against one or more other persons. This category excludes deaths resulting from legal intervention such as police actions. Assault-related injuries are purposefully inflicted by one person against one or more other persons but do not result in death. Legal intervention (e.g., police actions) are excluded from this category.

Other/Legal intent includes injuries sustained from operations related to war and legal interventions such as police actions.

Undetermined intent includes injuries for which there is not enough information to make a determination of intent.

Adverse effects from drugs and medical procedures also fall within the scope of injury and are presented in totals and all overview tables.

## MA Injury Data Key Findings, 2009

- In 2009, an average of **8** MA residents died **every day** from injuries. Table 2.
- Injuries were the *third leading* cause of death overall and the *leading* cause of death among MA residents ages 1 through 44 when all intents are combined (e.g., unintentional, homicide, suicide, etc.) Table 1.
- There were 2,920 injury deaths to MA residents and 775,783 nonfatal injuries treated in MA acute care hospitals. Nonfatal injuries include hospital discharges, observation stays and emergency department (ED) visits. Table 2.
- In 2009, the age-adjusted rate of fatal and nonfatal injuries combined was 11,898.3 per 100,000 MA residents. Table 2
- Of the 2,920 injury deaths in MA in 2009, 70% were associated with unintentional injuries, 18% were suicides and 6% were homicides. Table 4.
- Charges for injury-related hospitalizations in 2009 exceeded \$1.7 billion. Table 8.

## Differences by Gender and Age Group

- The injury death rate for MA males was 150% higher than for MA females (age-adjusted rates of 60.3 and 24.0 per 100,000 respectively). Table 2.
- These higher injury rates by gender were greatest among male infants under age one (234% higher), young adult males ages 15-24 (214% higher) and men ages 25-44 (237% higher). Table 3.
- Adults ages 85+ had the highest rates of fatal (268.1 per 100,000) and nonfatal injuries (21,956.4 per 100,000) compared to other age groups. Table 3
- Children ages 1-14 had the lowest rate of injury deaths (2.5 per 100,000), whereas infants under age one had the lowest rate of nonfatal injuries (7,215.9 per 100,000). Table 3.

## Injury Rates by Geographic Area

MA counties with the highest age-adjusted rates of fatal and nonfatal injury combined were: Table 9.

- Dukes (21,005.2 per 100,000)
- Berkshire (20,213.8 per 100,000)
- Nantucket (20,073.4 per 100,000)
- Barnstable (16,251.1 per 100,000)

MA Community Health Network Areas (CHNAs) with the highest age-adjusted rates of fatal and nonfatal injury combined were: Table 11.

- The Community Health Network of Berkshire (18,965.0 per 100,000)
- Partners for Healthier Communities - Fall River Region (17,557.6 per 100,000)
- Cape and Islands Health Network (15,335.7 per 100,000)
- Upper Valley Health Web - Franklin County (15,140.2 per 100,000)
- Greater New Bedford Community Health Network (15,049.6 per 100,000)



## Unintentional Injury

Poisonings/overdoses were the leading cause of unintentional injury deaths. Falls were the leading cause of nonfatal unintentional injuries. Table 6

Of the \$1.7 billion in total hospital charges for injury-related hospitalizations in MA in 2009, three-quarters (75%) or \$1.3 billion were associated with unintentional injuries. Table 8.

Of hospitalizations for unintentional injuries, injuries to motorcyclists had the highest median charges (\$29,789 per discharge) and falls accounted for the highest total hospital charges (\$746 million). Table 8.

Trends in Unintentional Fall-related Injury, Table 13.

Overall unintentional fall death rates increased 13.2% per year in MA between 2002 and 2009. This was partly due to increased identification of fall deaths by the Medical Examiner's Office after 2005.

Between 2002 and 2009, the overall rate of hospital stays for unintentional fall injuries increased 1.9% per year, while there was no significant change in the overall rate of ED visits for such injuries.

Trends in Unintentional Motor Vehicle-related Injury, Table 14.

Rates of unintentional MV-related death and injury decreased significantly in MA between 2002 and 2009. Death rates for such injuries decreased 6.7% per year, hospital stay rates decreased 4.3% per year, and ED visit rates for unintentional MV-related injuries decreased 6.8% per year during this time period.

Trends in Unintentional Traumatic Brain Injury (TBI), Table 15.

Rates of death and injury from unintentional traumatic brain injury (TBI) increased significantly in MA between 2002 and 2009. The death rate from unintentional TBIs increased 10.1% per year, hospital stay rates increased 2.8% per year, and rates of ED visits for unintentional TBIs increased 8.4% per year during this time period.

Trends in Unintentional/Undetermined Opioid Overdoses, Table 16.

Rates of fatal and nonfatal opioid overdoses of unintentional/undetermined intent increased significantly in MA between 2002 and 2009. Death rates for such opioid overdoses increased 3.9% per year, hospital stay rates increased 5.0% per year, and ED visit rates for opioid overdoses of unintentional/undetermined intent increased 3.7% per year during this time period.

## Suicide and Self-Inflicted Injury

- The leading cause of suicide was suffocation/hanging and the leading cause of nonfatal self-inflicted injuries were poisonings/overdoses. Table 6.
- Suicide rates were 4 times higher among MA males than females (13.2 vs. 3.2 per 100,000), being highest among males ages 45-64 (21.9 per 100,000). Rates of nonfatal self-inflicted injury, however, were slightly higher among MA females than males (191.8 vs. 151.1 per 100,000), being highest among females ages 15-24 (520.2 per 100,000). Table 5.
- Among self-inflicted injuries, firearm injuries had the highest median charges (\$66,458 per discharge) and poisonings/overdoses accounted for the highest total hospital charges (\$60 million). Table 8.

Trends in Suicide and Self-inflicted Injury, Table 17.

- The overall rate of suicide and hospital stays for nonfatal self-inflicted injuries increased significantly in MA between 2002 and 2009, with suicide rates increasing 3.1% per year and hospital stay rates increasing 1.0% per year. There was no significant change in the overall rate of ED visits for nonfatal self-inflicted injuries.
- Rates of suicide and hospital stays for self-inflicted injuries increased the most among MA residents ages 45-64, increasing by 6.3% and 4.4% per year respectively.
- The hospital stay rate for self-inflicted injuries decreased 2.8% per year among MA teens ages 15-19. This was the only age group for whom self-inflicted injury rates decreased.

## Homicide and Assault-related Injury

The leading cause of homicide were firearms and the leading cause of nonfatal assault-related injuries was being struck by or against an object. Table 6.

Homicide rates were 3 times higher among MA males than females (4.1 vs. 1.4 per 100,000). Nonfatal assault-related injury rates were twice as high among males than females (566.1 vs. 284.2 per 100,000). Males ages 15-24 had the highest rates of both homicide (11.4 per 100,000) and nonfatal assault-related injuries (1,484.7 per 100,000). Table 5.

Among hospitalizations for assault-related injuries, firearm injuries had the highest median charges (\$29,603). Total hospital charges for such firearm injuries (\$16 million) were only exceeded by total hospital charges for being struck by or against an object (\$17 million). Table 8.

Trends in Homicide and Assault-related Injury, Table 18.

Between 2002 and 2009, the hospital stay rate for assault-related injuries among MA residents increased 3.6% per year. There were no significant changes, however, in the overall homicide rate or ED visit rate for assault-related injuries among MA residents during this time period.

The two age groups for which such hospital stay rates increased were MA residents ages 25-44 (4.5% per year increase) and 45-64 (7.1% per year increase).

## Overview: 2009

**Table 1. Leading Causes of Death by Age Group, MA Residents, 2009**

| Rank | Age Groups (number of deaths)    |                                     |                                     |                                      |   |   |   |   |   |
|------|----------------------------------|-------------------------------------|-------------------------------------|--------------------------------------|---|---|---|---|---|
|      | <1 year                          | 1-14 years                          | 15-24 years                         | 25-44 years                          | 45-64 years                             | 65-74 years                             | 75-84 years                             | 85+ years                               | All Ages                                  |
| 1    | Short gestation and LBW (83)     | Cancer (21)                         | Unintentional Injuries (180)        | Unintentional Injuries (526)         | Cancer (3,257)                          | Cancer (3,030)                          | Cancer (3,846)                          | Heart Disease (5,565)                   | Cancer (13,042)                           |
| 2    | Congenital malformations (57)    | Unintentional Injuries (17)         | Homicide (67)                       | Cancer (333)                         | Heart Disease (1,665)                   | Heart Disease (1,444)                   | Heart Disease (3,296)                   | Cancer (2,530)                          | Heart Disease (12,233)                    |
| 3    | SIDS (34)                        | Congenital malformations (10)       | Suicide (50)                        | Heart Disease (234)                  | Unintentional Injuries (575)            | Chronic Lower Respiratory Disease (497) | Chronic Lower Respiratory Disease (923) | Stroke (1,313)                          | Total Injuries - All Intents (2,920)      |
| 4    | Pregnancy Complications (26)     | Heart Disease (6)                   | Cancer (24)                         | Suicide (178)                        | Chronic liver disease (296)             | Stroke (245)                            | Stroke (745)                            | Alzheimer's Disease (1,132)             | Stroke (2,552)                            |
| 5    | Complications of placenta (15)   | Ill-defined conditions (6)          | Heart Disease (20)                  | Homicide (73)                        | Chronic Lower Respiratory Disease (261) | Diabetes (201)                          | Alzheimer's Disease (471)               | Chronic Lower Respiratory Disease (844) | Chronic Lower Respiratory Disease (2,546) |
| 6    | Respiratory distress (12)        | Influenza & Pneumonia (5)           | Ill-defined conditions (15)         | Chronic liver disease (47)           | Suicide (240)                           | Nephritis (177)                         | Nephritis (374)                         | Influenza & Pneumonia (706)             | Alzheimer's Disease (1,690)               |
| 7    | Bacterial sepsis of newborn (10) | Homicide (5)                        | Congenital malformations (10)       | Stroke (45)                          | Diabetes (220)                          | Unintentional Injuries (136)            | Influenza & Pneumonia (363)             | Nephritis (588)                         | Influenza & Pneumonia (1,335)             |
| 8    | Neonatal hemorrhage (9)          | Injuries of Undetermined Intent (3) | Influenza & Pneumonia (7)           | Ill-defined conditions (44)          | Stroke (200)                            | Influenza & Pneumonia (120)             | Diabetes (276)                          | Unintentional Injuries (357)            | Nephritis (1,267)                         |
| 9    | Hematological disorders (5)      | Septicemia (2)                      | Injuries of Undetermined Intent (7) | Injuries of Undetermined Intent (32) | Nephritis (114)                         | Septicemia (112)                        | Septicemia (241)                        | Septicemia (277)                        | Diabetes (995)                            |
| 10   | Necrotizing enterocolitis (5)    | Other infection (2)                 | Other infection (3)                 | HIV/AIDS (31)                        | Influenza & Pneumonia (109)             | Chronic liver disease (108)             | Unintentional Injuries (239)            | Pneumonitis (270)                       | Septicemia (753)                          |

Source: Registry of Vital Records and Statistics, MDPH

**Table 2. Fatal and Nonfatal Injury Rates<sup>1</sup> by Sex, MA Residents, 2009**

|                   | Deaths | Nonfatal Hospital Stays      |                            | Nonfatal ED Visits | Total    |
|-------------------|--------|------------------------------|----------------------------|--------------------|----------|
|                   |        | Nonfatal Hospital Discharges | Nonfatal Observation Stays |                    |          |
| Males             |        |                              |                            |                    |          |
| Number            | 1,944  | 29,341                       | 5,387                      | 381,643            | 418,315  |
| Crude rate        | 60.7   | 915.5                        | 168.1                      | 11,907.8           | 13,052.0 |
| Age-adjusted rate | 60.3   | 927.7                        | 168.5                      | 12,068.8           | 13,225.2 |
| Females           |        |                              |                            |                    |          |
| Number            | 976    | 32,352                       | 5,405                      | 321,636            | 360,369  |
| Crude rate        | 28.8   | 954.7                        | 159.5                      | 9,491.7            | 10,634.7 |
| Age-adjusted rate | 24.0   | 776.4                        | 139.5                      | 9,591.2            | 10,531.1 |
| Injury Totals     |        |                              |                            |                    |          |
| Number            | 2,920  | 61,694                       | 10,792                     | 703,297            | 778,703  |
| Crude rate        | 44.3   | 935.7                        | 163.7                      | 10,666.4           | 11,810.0 |
| Age-adjusted rate | 41.4   | 856.4                        | 155.3                      | 10,845.2           | 11,898.3 |

1. Crude and age-adjusted rates are per 100,000 residents.

**Table 3. Fatal and Nonfatal Injury Cases by Sex and Age Group, MA Residents, 2009**

|                            | Deaths       |                   | Nonfatal Hospital Stays |                   | Nonfatal ED Visits |                   | Total          |                   |
|----------------------------|--------------|-------------------|-------------------------|-------------------|--------------------|-------------------|----------------|-------------------|
|                            | Number       | Rate <sup>1</sup> | Number                  | Rate <sup>1</sup> | Number             | Rate <sup>1</sup> | Number         | Rate <sup>1</sup> |
| <b>Males<sup>2</sup></b>   | <b>1,944</b> | <b>60.7</b>       | <b>34,728</b>           | <b>1,083.6</b>    | <b>381,643</b>     | <b>11,907.8</b>   | <b>418,315</b> | <b>13,052.0</b>   |
| <1                         | 7            | 17.7              | 310                     | 785.7             | 2,604              | 6,599.6           | 2,921          | 7,403.0           |
| 1-14                       | 16           | 2.9               | 1,782                   | 317.6             | 75,328             | 13,423.4          | 77,126         | 13,743.8          |
| 15-24                      | 235          | 50.5              | 3,646                   | 784.1             | 81,340             | 17,492.1          | 85,221         | 18,326.7          |
| 25-44                      | 630          | 70.7              | 7,297                   | 819.0             | 118,971            | 13,353.0          | 126,898        | 14,242.7          |
| 45-64                      | 639          | 72.6              | 10,121                  | 1,149.6           | 75,657             | 8,593.7           | 86,417         | 9,816.0           |
| 65-74                      | 117          | 57.0              | 3,511                   | 1,709.7           | 12,889             | 6,276.5           | 16,517         | 8,043.3           |
| 75-84                      | 161          | 132.3             | 4,623                   | 3,798.1           | 9,761              | 8,019.4           | 14,545         | 11,949.8          |
| 85+                        | 138          | 337.1             | 3,438                   | 8,399.3           | 5,092              | 12,440.1          | 8,668          | 21,176.6          |
| <b>Females<sup>2</sup></b> | <b>976</b>   | <b>28.8</b>       | <b>37,757</b>           | <b>1,114.2</b>    | <b>321,636</b>     | <b>9,491.7</b>    | <b>360,369</b> | <b>10,634.7</b>   |
| <1                         | 2            | --                | 251                     | 665.4             | 2,394              | 6,349.4           | 2,647          | 7,020.1           |
| 1-14                       | 12           | 2.2               | 1,070                   | 198.8             | 52,326             | 9,723.1           | 53,408         | 9,924.2           |
| 15-24                      | 74           | 16.1              | 2,200                   | 478.7             | 56,764             | 12,350.8          | 59,038         | 12,845.6          |
| 25-44                      | 188          | 21.0              | 4,582                   | 511.2             | 92,063             | 10,270.5          | 96,833         | 10,802.7          |
| 45-64                      | 252          | 27.1              | 7,704                   | 828.2             | 72,129             | 7,753.8           | 80,085         | 8,609.1           |
| 65-74                      | 75           | 30.6              | 4,359                   | 1,777.5           | 16,326             | 6,657.4           | 20,760         | 8,465.5           |
| 75-84                      | 131          | 72.6              | 8,307                   | 4,602.4           | 16,710             | 9,258.1           | 25,148         | 13,933.1          |
| 85+                        | 242          | 240.1             | 9,284                   | 9,211.2           | 12,923             | 12,821.7          | 22,449         | 22,273.0          |
| <b>Total<sup>3</sup></b>   | <b>2,920</b> | <b>44.3</b>       | <b>72,486</b>           | <b>1,099.3</b>    | <b>703,297</b>     | <b>10,666.4</b>   | <b>778,703</b> | <b>11,810.0</b>   |
| <1                         | 9            | 11.7              | 561                     | 726.9             | 4,998              | 6,477.3           | 5,568          | 7,215.9           |
| 1-14                       | 28           | 2.5               | 2,852                   | 259.4             | 127,656            | 11,612.2          | 130,536        | 11,874.2          |
| 15-24                      | 309          | 33.4              | 5,847                   | 632.4             | 138,106            | 14,936.7          | 144,262        | 15,602.5          |
| 25-44                      | 818          | 45.8              | 11,879                  | 664.6             | 211,038            | 11,807.3          | 223,735        | 12,517.7          |
| 45-64                      | 891          | 49.2              | 17,825                  | 984.5             | 147,795            | 8,162.7           | 166,511        | 9,196.4           |
| 65-74                      | 192          | 42.6              | 7,870                   | 1,746.6           | 29,216             | 6,484.0           | 37,278         | 8,273.3           |
| 75-84                      | 292          | 96.6              | 12,930                  | 4,278.5           | 26,471             | 8,759.2           | 39,693         | 13,134.3          |
| 85+                        | 380          | 268.1             | 12,722                  | 8,976.7           | 18,015             | 12,711.5          | 31,117         | 21,956.4          |

1. Represents crude rates per 100,000 residents. Per DHCFP confidentiality rules, numbers and rates for less than 7 nonfatal injuries and rates for less than 5 deaths are suppressed.

Rates based on counts <20 may be unstable and should be interpreted with caution.

2. Total includes cases for which age was unknown or missing.

3. Total includes cases for which age and/or sex was unknown or missing.

Sources: Deaths - Registry of Vital Records and Statistics, MDPH; Nonfatal Injuries - MA Inpatient Hospital Discharge Database, MA Outpatient Observation Database, and MA Outpatient Emergency Department Database, Division of Health Care Finance and Policy

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**Table 4. Fatal and Nonfatal Injury Cases by Intent, MA Residents, 2009**

| Intent of Injury                                  | Deaths       |                   | Nonfatal Hospital Stays |                   | Nonfatal ED Visits |                   | Total          |                   |
|---|--------------|-------------------|-------------------------|-------------------|--------------------|-------------------|----------------|-------------------|
|   | Number       | Rate <sup>1</sup> | Number                  | Rate <sup>1</sup> | Number             | Rate <sup>1</sup> | Number         | Rate <sup>1</sup> |
| Unintentional                                     | 2,034        | 30.8              | 55,350                  | 839.5             | 656,979            | 9,963.9           | 714,363        | 10,834.2          |
| Suicide and Self-Inflicted                        | 531          | 8.1               | 4,671                   | 70.8              | 6,674              | 101.2             | 11,876         | 180.1             |
| Homicide and Assault                              | 180          | 2.7               | 2,517                   | 38.2              | 25,260             | 383.1             | 27,957         | 424.0             |
| Undetermined Intent                               | 103          | 1.6               | 964                     | 14.6              | 6,404              | 97.1              | 7,471          | 113.3             |
| Other/Legal                                       | 9            | 0.1               | 55                      | 0.8               | 607                | 9.2               | 671            | 10.2              |
| Adverse effects                                   | 63           | 1.0               | 3,264                   | 49.5              | 1,376              | 20.9              | 4,703          | 71.3              |
| Injury code is incomplete or missing <sup>2</sup> | 0            | 0.0               | 5,665                   | 85.9              | 5,997              | 91.0              | 11,662         | 176.9             |
| <b>Total</b>                                      | <b>2,920</b> | <b>44.3</b>       | <b>72,486</b>           | <b>1099.3</b>     | <b>703,297</b>     | <b>10,666.4</b>   | <b>778,703</b> | <b>11,810.0</b>   |

1. Represents crude rates per 100,000 residents. Rates based on counts <20 may be unstable and should be interpreted with caution.

2. The ICD-9-CM external cause of injury code was either incomplete or missing.

Sources: Deaths - Registry of Vital Records and Statistics, MDPH; Nonfatal Injuries - MA Inpatient Hospital Discharge Database, MA Outpatient Observation Database, and MA Outpatient Emergency Department Database, Division of Health Care Finance and Policy

**Table 5. Fatal and Nonfatal Injury Cases<sup>1</sup> by Intent, Sex and Age Group, MA Residents, 2009**

|                            | Unintentional |                   |                   |                   | Suicide/Self-Inflicted |                   |                   |                   | Homicide/Assaults |                   |                   |                   |
|----------------------------|---------------|-------------------|-------------------|-------------------|------------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
|                            | Deaths        |                   | Nonfatal Injuries |                   | Deaths                 |                   | Nonfatal Injuries |                   | Deaths            |                   | Nonfatal Injuries |                   |
|                            | Number        | Rate <sup>2</sup> | Number            | Rate <sup>2</sup> | Number                 | Rate <sup>2</sup> | Number            | Rate <sup>2</sup> | Number            | Rate <sup>2</sup> | Number            | Rate <sup>2</sup> |
| <b>Males<sup>3</sup></b>   | <b>1,287</b>  | <b>40.2</b>       | <b>380,020</b>    | <b>11,857.2</b>   | <b>422</b>             | <b>13.2</b>       | <b>4,844</b>      | <b>151.1</b>      | <b>131</b>        | <b>4.1</b>        | <b>18,144</b>     | <b>566.1</b>      |
| <1                         | 3             | --                | 2,780             | 7,045.6           | 0                      | 0.0               | 1                 | --                | 0                 | 0.0               | 35                | 88.7              |
| 1-14                       | 12            | 2.1               | 75,380            | 13,432.7          | 1                      | --                | 118               | 21.0              | 1                 | --                | 791               | 141.0             |
| 15-24                      | 135           | 29.0              | 74,716            | 16,067.6          | 37                     | 8.0               | 1,330             | 286.0             | 53                | 11.4              | 6,904             | 1,484.7           |
| 25-44                      | 397           | 44.6              | 112,604           | 12,638.3          | 145                    | 16.3              | 2,144             | 240.6             | 60                | 6.7               | 7,309             | 820.3             |
| 45-64                      | 401           | 45.5              | 78,093            | 8,870.4           | 193                    | 21.9              | 1,150             | 130.6             | 12                | 1.4               | 2,904             | 329.9             |
| 65-74                      | 85            | 41.4              | 15,283            | 7,442.3           | 19                     | 9.3               | 63                | 30.7              | 4                 | --                | 144               | 70.1              |
| 75-84                      | 128           | 105.2             | 13,321            | 10,944.1          | 21                     | 17.3              | 24                | 19.7              | 1                 | --                | 40                | 32.9              |
| 85+                        | 126           | 307.8             | 7,843             | 19,161.0          | 5                      | 12.2              | 14                | 34.2              | 0                 | 0.0               | 17                | 41.5              |
| <b>Females<sup>3</sup></b> | <b>747</b>    | <b>22.0</b>       | <b>332,292</b>    | <b>9,806.2</b>    | <b>109</b>             | <b>3.2</b>        | <b>6,501</b>      | <b>191.8</b>      | <b>49</b>         | <b>1.4</b>        | <b>9,631</b>      | <b>284.2</b>      |
| <1                         | 1             | --                | 2,532             | 6,712.6           | 0                      | 0.0               | 0                 | 0.0               | 1                 | --                | 33                | 87.5              |
| 1-14                       | 5             | 0.9               | 51,959            | 9,654.9           | 1                      | --                | 370               | 68.8              | 4                 | --                | 490               | 91.1              |
| 15-24                      | 45            | 9.8               | 51,680            | 11,244.6          | 13                     | 2.8               | 2,391             | 520.2             | 14                | 3.0               | 3,367             | 732.6             |
| 25-44                      | 129           | 14.4              | 87,240            | 9,732.5           | 33                     | 3.7               | 2,412             | 269.1             | 13                | 1.5               | 4,201             | 468.7             |
| 45-64                      | 174           | 18.7              | 74,609            | 8,020.4           | 47                     | 5.1               | 1,200             | 129.0             | 10                | 1.1               | 1,400             | 150.5             |
| 65-74                      | 51            | 20.8              | 19,580            | 7,984.3           | 10                     | 4.1               | 71                | 29.0              | 3                 | --                | 79                | 32.2              |
| 75-84                      | 111           | 61.5              | 23,639            | 13,097.1          | 4                      | --                | 44                | 24.4              | 2                 | --                | 33                | 18.3              |
| 85+                        | 231           | 229.2             | 21,052            | 20,887.0          | 1                      | --                | 13                | 12.9              | 2                 | --                | 28                | 27.8              |
| <b>Total<sup>4</sup></b>   | <b>2,034</b>  | <b>30.8</b>       | <b>712,329</b>    | <b>10,803.4</b>   | <b>531</b>             | <b>8.1</b>        | <b>11,345</b>     | <b>172.1</b>      | <b>180</b>        | <b>2.7</b>        | <b>27,777</b>     | <b>421.3</b>      |
| <1                         | 4             | --                | 5,312             | 6,882.9           | 0                      | 0.0               | 1                 | --                | 1                 | --                | 68                | 88.1              |
| 1-14                       | 17            | 1.5               | 127,341           | 11,583.5          | 2                      | --                | 488               | 44.4              | 5                 | 0.5               | 1,281             | 116.5             |
| 15-24                      | 180           | 19.5              | 126,398           | 13,670.4          | 50                     | 5.4               | 3,721             | 402.4             | 67                | 7.2               | 10,272            | 1,111.0           |
| 25-44                      | 526           | 29.4              | 199,847           | 11,181.2          | 178                    | 10.0              | 4,556             | 254.9             | 73                | 4.1               | 11,511            | 644.0             |
| 45-64                      | 575           | 31.8              | 152,711           | 8,434.2           | 240                    | 13.3              | 2,350             | 129.8             | 22                | 1.2               | 4,304             | 237.7             |
| 65-74                      | 136           | 30.2              | 34,864            | 7,737.5           | 29                     | 6.4               | 134               | 29.7              | 7                 | 1.6               | 223               | 49.5              |
| 75-84                      | 239           | 79.1              | 36,960            | 12,229.9          | 25                     | 8.3               | 68                | 22.5              | 3                 | --                | 73                | 24.2              |
| 85+                        | 357           | 251.9             | 28,895            | 20,388.5          | 6                      | 4.2               | 27                | 19.1              | 2                 | --                | 45                | 31.8              |

1. Nonfatal injuries include nonfatal hospital discharges, observation stays and emergency department (ED) visits.

2. Represents crude rates per 100,000 residents. Per DHCFP confidentiality rules, numbers and rates for less than 7 nonfatal injuries and rates for less than 5 deaths are suppressed.

Rates based on counts <20 may be unstable and should be interpreted with caution.

3. Total includes cases for which age was unknown or missing.

4. Total includes cases for which age and/or sex was unknown or missing.

Sources: Deaths - Registry of Vital Records and Statistics, MDPH; Nonfatal Injuries - MA Inpatient Hospital Discharge Database, MA Outpatient Observation Database, and MA Outpatient Emergency Department Database, Division of Health Care Finance and Policy

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**Table 6. Fatal and Nonfatal Injury Cases by Intent and Selected Causes, MA Residents, 2009**

| Intent and Cause                         | Deaths | Hospital Stays (nonfatal) | ED Visits (nonfatal) | Total Cases <sup>1</sup> |                   |                                      |
|--|--------|---------------------------|----------------------|--------------------------|-------------------|--------------------------------------|
|  | Number | Number                    | Number               | Total Injury Count       | Rate <sup>2</sup> | Case Fatality Ratio (%) <sup>3</sup> |
| Total Unintentional Injuries             | 2,034  | 55,350                    | 656,979              | 714,363                  | 10,834.2          | 0.3%                                 |
| Fall                                     | 491    | 31,841                    | 193,286              | 225,618                  | 3,421.8           | 0.2%                                 |
| Struck by or against an object           | 12     | 1,641                     | 101,915              | 103,568                  | 1,570.7           | 0.0%                                 |
| Transport Injuries:                      | 399    | 5,563                     | 80,734               | 86,696                   | 1,314.9           | 0.5%                                 |
| <i>Motor vehicle (MV)</i>                | 347    | 4,299                     | 67,472               | 72,118                   | 1,093.8           | 0.5%                                 |
| <i>MV Injury to occupant<sup>4</sup></i> | 227    | 2,877                     | 60,318               | 63,422                   | 961.9             | 0.4%                                 |
| <i>MV Injury to pedestrian</i>           | 59     | 666                       | 3,371                | 4,096                    | 62.1              | 1.4%                                 |
| <i>MV Injury to motorcyclist</i>         | 57     | 547                       | 2,402                | 3,006                    | 45.6              | 1.9%                                 |
| <i>MV Injury to pedal cyclist</i>        | 4      | 178                       | 1,142                | 1,324                    | 20.1              | 0.3%                                 |
| <i>MV Injury to other person</i>         | 0      | 31                        | 239                  | 270                      | 4.1               | 0.0%                                 |
| <i>Pedal cyclist, non-traffic</i>        | 8      | 566                       | 8,290                | 8,864                    | 134.4             | 0.1%                                 |
| <i>Pedestrian, non-traffic</i>           | 9      | 47                        | 466                  | 522                      | 7.9               | 1.7%                                 |
| <i>Other transport</i>                   | 35     | 651                       | 4,506                | 5,192                    | 78.7              | 0.7%                                 |
| Overexertion                             | 0      | 1,231                     | 78,004               | 79,235                   | 1,201.7           | 0.0%                                 |
| Cut/pierce                               | 2      | 678                       | 62,356               | 63,036                   | 956.0             | 0.0%                                 |
| Natural/environmental                    | 14     | 1,412                     | 29,753               | 31,179                   | 472.9             | 0.0%                                 |
| Poisoning/overdose                       | 767    | 3,292                     | 7,419                | 11,478                   | 174.1             | 6.7%                                 |
| Fire/burn total                          | 22     | 582                       | 9,268                | 9,872                    | 149.7             | 0.2%                                 |
| <i>Burns, hot object/substance</i>       | 1      | 380                       | 7,756                | 8,137                    | 123.4             | 0.0%                                 |
| <i>Fire/flame</i>                        | 21     | 202                       | 1,512                | 1,735                    | 26.3              | 1.2%                                 |
| Machinery                                | 8      | 204                       | 3,194                | 3,406                    | 51.7              | 0.2%                                 |
| Hanging, strangulation, or suffocation   | 112    | 643                       | 443                  | 1,198                    | 18.2              | 9.3%                                 |
| Firearm                                  | 1      | 35                        | 180                  | 216                      | 3.3               | 0.5%                                 |
| Drowning or near drowning/submersion     | 38     | 40                        | 137                  | 215                      | 3.3               | 17.7%                                |
| Other or unspecified causes              | 168    | 8,188                     | 90,290               | 98,646                   | 1,496.1           | 0.2%                                 |

1. Totals include fatal and nonfatal injury cases among MA residents.

2. Represents crude rates per 100,000 residents. Rates based on counts <20 may be unstable and should be interpreted with caution.

The number and rate of nonfatal injuries for counts less than 7 are suppressed based on the DHCFP rules pertaining to confidentiality.

3. The case fatality ratio (number of fatal injury cases among the total number of fatal and nonfatal injuries) is based only on Massachusetts residents who died in Massachusetts and those treated within a MA acute care hospital.

Case fatality-ratio is presented here as a percent.

4. Occupants includes drivers, passengers, and unspecified persons.

Sources: Deaths - Registry of Vital Records and Statistics, MDPH; Nonfatal Injuries - MA Inpatient Hospital Discharge Database,

MA Outpatient Observation Database, and MA Outpatient Emergency Department Database, Division of Health Care Finance and Policy

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**Table 6. Fatal and Nonfatal Injury Cases by Intent and Selected Causes, MA Residents, 2009**

(continued)

| Intent and Cause                              | Deaths       | Hospital Stays (nonfatal) | ED Visits (nonfatal) | Total Cases <sup>1</sup> |                   |                                      |
|---|--------------|---------------------------|----------------------|--------------------------|-------------------|--------------------------------------|
|   | Number       | Number                    | Number               | Total Injury Count       | Rate <sup>2</sup> | Case Fatality Ratio (%) <sup>3</sup> |
| <b>Total Suicides/Self-inflicted Injuries</b> | 531          | 4,671                     | 6,674                | 11,876                   | 180.1             | 4.5%                                 |
| Poisoning/overdose                            | 122          | 3,781                     | 3,392                | 7,295                    | 110.6             | 1.7%                                 |
| Cut/Pierce                                    | 13           | 571                       | 2432                 | 3016                     | 45.7              | 0.4%                                 |
| Hanging, strangulation, or suffocation        | 257          | 42                        | 92                   | 391                      | 5.9               | 65.7%                                |
| Firearm                                       | 89           | 12                        | 3                    | 104                      | 1.6               | 85.6%                                |
| Fall  | 17           | 34                        | 28                   | 79                       | 1.2               | 21.5%                                |
| Other or unspecified causes                   | 33           | 231                       | 727                  | 991                      | 15.0              | 3.3%                                 |
| <b>Total Homicides/Assaults</b>               | 180          | 2,517                     | 25,260               | 27,957                   | 424.0             | 0.6%                                 |
| Struck by or against an object                | 3            | 823                       | 13,294               | 14120                    | 214.1             | 0.0%                                 |
| Cut/pierce                                    | 36           | 536                       | 1,600                | 2,172                    | 32.9              | 1.7%                                 |
| Firearm                                       | 108          | 300                       | 191                  | 599                      | 9.1               | 18.0%                                |
| Other or unspecified causes                   | 33           | 858                       | 10,175               | 11,066                   | 167.8             | 0.3%                                 |
| <b>Total Injuries of Undetermined Intent</b>  | 103          | 964                       | 6,404                | 7,471                    | 113.3             | 1.4%                                 |
| Poisoning/overdose                            | 50           | 689                       | 2,887                | 3,626                    | 55.0              | 1.4%                                 |
| Firearm                                       | 3            | 36                        | 41                   | 80                       | 1.2               | 3.8%                                 |
| Fall  | 3            | 13                        | 61                   | 77                       | 1.2               | 3.9%                                 |
| Drowning or near drowning/submersion          | 17           | --                        | --                   | 21                       | 0.3               | 81.0%                                |
| Other or unspecified causes                   | 30           | 225                       | 3,412                | 3,667                    | 55.6              | 0.8%                                 |
| <b>Total Injuries of other causes/intents</b> | 72           | 3,319                     | 1,983                | 5,374                    | 81.5              | 1.3%                                 |
| <b>Injury code is incomplete or missing</b>   | 0            | 5,665                     | 5,997                | 11,662                   | 176.9             | 0.0%                                 |
| <b>Total Injuries</b>                         | <b>2,920</b> | <b>72,486</b>             | <b>703,297</b>       | <b>778,703</b>           | <b>11,810.0</b>   | <b>0.4%</b>                          |

1. Totals include fatal and nonfatal injury cases among MA residents.

2. Represents crude rates per 100,000 residents. Rates based on counts <20 may be unstable and should be interpreted with caution.

Per DHCFP confidentiality rules, numbers and rates for less than 7 nonfatal injuries and rates for less than 5 deaths are suppressed.

3. The case fatality ratio (number of fatal injury cases among the total number of fatal and nonfatal injuries) is based only on Massachusetts residents who died in Massachusetts and those treated within a MA acute care hospital.

Case fatality-ratio is presented here as a percent.

Sources: Deaths - Registry of Vital Records and Statistics, MDPH; Nonfatal Injuries - MA Inpatient Hospital Discharge Database,

MA Outpatient Observation Database, and MA Outpatient Emergency Department Database, Division of Health Care Finance and Policy

**Table 7. Leading Causes of Fatal and Nonfatal Injury Cases<sup>1</sup> by Age Group, MA Residents, 2009**

| Age         | Deaths                               |        |                   | Nonfatal Hospital Stays        |         |                   | Nonfatal ED Visits |        |                   |
|-------------|--------------------------------------|--------|-------------------|--------------------------------|---------|-------------------|--------------------|--------|-------------------|
|             | Cause                                | Number | Rate <sup>1</sup> | Cause                          | Number  | Rate <sup>1</sup> | Cause              | Number | Rate <sup>1</sup> |
| < 1 year    | Suffocation                          | 2      | --                | Fall                           | 177     | 229.3             | Fall               | 2,779  | 3,600.8           |
|             | Homicide                             | 1      | --                | Assault                        | 47      | 60.9              | Struck by          | 578    | 748.9             |
|             | Drowning;<br>Fire/burn;<br>Poisoning | 1 each | --                | Suffocation                    | 32      | 41.5              | Fire/burn          | 176    | 228.0             |
|             | Other/unknown                        | 3      | --                | Natural/envIRON.;<br>Poisoning | 16 each | 20.7              | Natural/envIRON.   | 160    | 207.3             |
|             | TOTAL <sup>5</sup>                   | 9      | 11.7              | Other/unknown                  | 273     | 353.7             | Other/unknown      | 1,305  | 1,690.9           |
|             |                                      |        |                   | TOTAL <sup>5</sup>             | 561     | 726.9             | TOTAL <sup>5</sup> | 4,998  | 6,476.0           |
|             |                                      |        |                   |                                |         |                   |                    |        |                   |
| Age         | Deaths                               |        |                   | Nonfatal Hospital Stays        |         |                   | Nonfatal ED Visits |        |                   |
|             | Cause                                | Number | Rate <sup>1</sup> | Cause                          | Number  | Rate <sup>1</sup> | Cause              | Number | Rate <sup>1</sup> |
| 1 - 4 years | Pedestrian <sup>3</sup>              | 4      | --                | Fall                           | 303     | 98.2              | Fall               | 17,301 | 5,604.9           |
|             | MV-occupant <sup>4</sup>             | 2      | --                | Poisoning                      | 189     | 61.2              | Struck by          | 6,877  | 2,227.9           |
|             | Fire/burn                            | 2      | --                | Natural/envIRON.               | 59      | 19.1              | Natural/envIRON.   | 2,780  | 900.6             |
|             | Homicide;<br>Drowning; Fall          | 1 each | --                | Struck by                      | 52      | 16.8              | Cut/pierce         | 1,944  | 629.8             |
|             | Other/unknown                        | 1      | --                | Other/unknown                  | 361     | 117.0             | Other/unknown      | 11,764 | 3811.1            |
|             | TOTAL <sup>5</sup>                   | 12     | 3.9               | TOTAL <sup>5</sup>             | 964     | 312.3             | TOTAL <sup>5</sup> | 40,666 | 13,174.4          |
|             |                                      |        |                   |                                |         |                   |                    |        |                   |
| Age         | Deaths                               |        |                   | Nonfatal Hospital Stays        |         |                   | Nonfatal ED Visits |        |                   |
|             | Cause                                | Number | Rate <sup>1</sup> | Cause                          | Number  | Rate <sup>1</sup> | Cause              | Number | Rate <sup>1</sup> |
| 5 - 9 years | Homicide                             | 4      | --                | Fall                           | 360     | 91.9              | Fall               | 12,645 | 3,229.3           |
|             | Fall                                 | 1      | --                | Struck by                      | 65      | 16.6              | Struck by          | 8,132  | 2,076.8           |
|             | Pedal cyclist <sup>3</sup>           | 1      | --                | Pedal cyclist <sup>3</sup>     | 50      | 12.8              | Cut/pierce         | 2,589  | 661.2             |
|             | Pedestrian <sup>3</sup>              | 1      | --                | Natural/envIRON.               | 40      | 10.2              | Natural/envIRON.   | 2,448  | 625.2             |
|             | Other/unknown                        | 0      | 0.0               | Other/unknown                  | 310     | 79.2              | Other/unknown      | 9,470  | 2,418.5           |
|             | TOTAL <sup>5</sup>                   | 7      | 1.8               | TOTAL <sup>5</sup>             | 825     | 210.7             | TOTAL <sup>5</sup> | 35,284 | 9,011.0           |
|             |                                      |        |                   |                                |         |                   |                    |        |                   |

1. Causes of unintentional or undetermined intent are combined. Intentional injuries (suicides/self-inflicted injuries or homicides/assaults) are not broken down by cause.

2. Represents crude rates per 100,000 residents. Per DHCFP confidentiality rules, numbers and rates for less than 7 nonfatal injuries and rates for less than 5 deaths are suppressed.

Rates based on counts <20 may be unstable and should be interpreted with caution.

3. Pedal cyclist and pedestrian causes include both MV and non-MV related cases.

4. MV-occupants include unspecified persons, but not motorcyclists.

5. Total includes cases for which cause was unknown or missing.

Sources: Deaths - Registry of Vital Records and Statistics, MDPH; Nonfatal Injuries - MA Inpatient Hospital Discharge Database, MA Outpatient Observation Database, and MA Outpatient Emergency Department Database, Division of Health Care Finance and Policy

**Table 7. Number and Rate of Leading Causes of Fatal and Nonfatal Injury-related Cases<sup>1</sup> by Age Group, MA Residents, 2009** (continued)

| Age           | Deaths  |        |                   | Nonfatal Hospital Stays    |        |                   | Nonfatal ED Visits       |         |                   |
|---------------|---|--------|-------------------|----------------------------|--------|-------------------|--------------------------|---------|-------------------|
|               | Cause   | Number | Rate <sup>1</sup> | Cause                      | Number | Rate <sup>1</sup> | Cause                    | Number  | Rate <sup>1</sup> |
| 10 - 14 years | Suicide   | 2      | --                | Fall                       | 314    | 78.7              | Struck by                | 15,817  | 3,963.3           |
|               | MV-occupant <sup>4</sup>  | 2      | --                | Struck by                  | 142    | 35.6              | Fall                     | 13,585  | 3,404.0           |
|               | Drowning; Struck by;<br>Pedal cyclist <sup>3</sup> ;<br>Poisoning | 1 each | --                | Pedal cyclist <sup>3</sup> | 107    | 26.8              | Overexertion             | 5,899   | 1,478.1           |
|               | Other/unknown   | 1      | --                | Self-inflicted             | 76     | 19.0              | Cut/pierce               | 3,331   | 834.7             |
|               | TOTAL <sup>5</sup>  | 9      | 2.3               | Other/unknown              | 424    | 106.2             | Other/unknown            | 13,074  | 3,276.0           |
|               |   |        |                   | TOTAL <sup>5</sup>         | 1,063  | 266.4             | TOTAL <sup>5</sup>       | 51,706  | 12,956.0          |
|               |   |        |                   |                            |        |                   |                          |         |                   |
| Age           | Deaths  |        |                   | Nonfatal Hospital Stays    |        |                   | Nonfatal ED Visits       |         |                   |
|               | Cause   | Number | Rate <sup>1</sup> | Cause                      | Number | Rate <sup>1</sup> | Cause                    | Number  | Rate <sup>1</sup> |
| 15 - 19 years | Homicide  | 24     | 5.2               | Self-inflicted             | 492    | 106.2             | Struck by                | 16,708  | 3,606.6           |
|               | MV-occupant <sup>4</sup>  | 24     | 5.2               | Fall                       | 345    | 74.5              | Fall                     | 10,766  | 2,324.0           |
|               | Suicide   | 19     | 4.1               | MV-occupant <sup>4</sup>   | 303    | 65.4              | Overexertion             | 8,224   | 1,775.3           |
|               | Poisoning   | 6      | 1.3               | Assault                    | 297    | 64.1              | MV-occupant <sup>4</sup> | 7,278   | 1,571.0           |
|               | Other/unknown   | 17     | 3.7               | Other/unknown              | 1,154  | 249.1             | Other/unknown            | 24,816  | 5,356.8           |
|               | TOTAL <sup>5</sup>  | 90     | 19.4              | TOTAL <sup>5</sup>         | 2,591  | 559.3             | TOTAL <sup>5</sup>       | 67,792  | 14,633.7          |
|               |   |        |                   |                            |        |                   |                          |         |                   |
| Age           | Deaths  |        |                   | Nonfatal Hospital Stays    |        |                   | Nonfatal ED Visits       |         |                   |
|               | Cause   | Number | Rate <sup>1</sup> | Cause                      | Number | Rate <sup>1</sup> | Cause                    | Number  | Rate <sup>1</sup> |
| 20 - 24 years | Poisoning   | 63     | 13.7              | Self-inflicted             | 614    | 133.1             | Fall                     | 11,020  | 2,388.6           |
|               | MV-occupant <sup>4</sup>  | 46     | 10.0              | Assault                    | 462    | 100.1             | MV-occupant <sup>4</sup> | 9,892   | 2,144.1           |
|               | Homicide  | 43     | 9.3               | MV-occupant <sup>4</sup>   | 437    | 94.7              | Struck by                | 9,818   | 2,128.1           |
|               | Suicide   | 31     | 6.7               | Fall                       | 379    | 82.2              | Overexertion             | 8,335   | 1,806.7           |
|               | Other/unknown   | 36     | 7.8               | Other/unknown              | 1,364  | 295.7             | Other/unknown            | 31,249  | 6,773.4           |
|               | TOTAL <sup>5</sup>  | 219    | 47.5              | TOTAL <sup>5</sup>         | 3,256  | 705.8             | TOTAL <sup>5</sup>       | 70,314  | 15,240.9          |
|               |   |        |                   |                            |        |                   |                          |         |                   |
| Age           | Injury Fatalities   |        |                   | Nonfatal Hospital Stays    |        |                   | Nonfatal ED Visits       |         |                   |
|               | Cause   | Number | Rate <sup>1</sup> | Cause                      | Number | Rate <sup>1</sup> | Cause                    | Number  | Rate <sup>1</sup> |
| 25 - 44 years | Poisoning   | 368    | 20.6              | Fall                       | 2,070  | 115.8             | Fall                     | 40,330  | 2,256.4           |
|               | Suicide   | 178    | 10.0              | Self-inflicted             | 1,974  | 110.4             | Overexertion             | 30,529  | 1,708.1           |
|               | Homicide  | 73     | 4.1               | Poisoning                  | 1,056  | 59.1              | Struck by                | 25,258  | 1,413.2           |
|               | MV-occupant <sup>4</sup>  | 55     | 3.1               | Assault                    | 1,052  | 58.9              | MV-occupant <sup>4</sup> | 23,923  | 1,338.5           |
|               | Other/unknown   | 144    | 8.1               | Other/unknown              | 5,727  | 320.4             | Other/unknown            | 90,998  | 5,091.2           |
|               | TOTAL <sup>5</sup>  | 818    | 45.8              | TOTAL <sup>5</sup>         | 11,879 | 664.6             | TOTAL <sup>5</sup>       | 211,038 | 11,807.3          |
|               |   |        |                   |                            |        |                   |                          |         |                   |

1. Causes of unintentional or undetermined intent are combined. Intentional injuries (suicides/self-inflicted injuries or homicides/assaults) are not broken down by cause.

2. Represents crude rates per 100,000 residents. Per DHCFP confidentiality rules, numbers and rates for less than 7 nonfatal injuries and rates for less than 5 deaths are suppressed.

Rates based on counts <20 may be unstable and should be interpreted with caution.

3. Pedal cyclist and pedestrian causes include both MV and non-MV related cases.

4. MV-occupants include unspecified persons, but not motorcyclists.

5. Total includes cases for which cause was unknown or missing.

Sources: Deaths - Registry of Vital Records and Statistics, MDPH; Nonfatal Injuries - MA Inpatient Hospital Discharge Database, MA Outpatient Observation Database, and MA Outpatient Emergency Department Database, Division of Health Care Finance and Policy

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**Table 7. Number and Rate of Leading Causes of Fatal and Nonfatal Injury-related Cases<sup>1</sup> by Age Group, MA Residents, 2009**  
(continued)

| Age           | Deaths                   |        |                   | Nonfatal Hospital Stays  |        |                   | Nonfatal ED Visits |         |                   |
|---------------|--------------------------|--------|-------------------|--------------------------|--------|-------------------|--------------------|---------|-------------------|
|               | Cause                    | Number | Rate <sup>1</sup> | Cause                    | Number | Rate <sup>1</sup> | Cause              | Number  | Rate <sup>1</sup> |
| 45 - 64 years | Poisoning                | 345    | 19.1              | Fall                     | 6,130  | 338.6             | Fall               | 44,090  | 2,435.1           |
|               | Suicide                  | 240    | 13.3              | Poisoning                | 1,416  | 78.2              | Overexertion       | 17,204  | 950.2             |
|               | Fall                     | 65     | 3.6               | Self-inflicted           | 1,344  | 74.2              | Cut/pierce         | 15,164  | 837.5             |
|               | MV-occupant <sup>4</sup> | 60     | 3.3               | MV-occupant <sup>4</sup> | 693    | 38.3              | Struck by          | 13,886  | 766.9             |
|               | Other/unknown            | 181    | 10.0              | Other/unknown            | 8,242  | 455.2             | Other/unknown      | 57,451  | 3,173.0           |
|               | TOTAL <sup>5</sup>       | 891    | 49.2              | TOTAL <sup>5</sup>       | 17,825 | 984.5             | TOTAL <sup>5</sup> | 147,795 | 8,162.7           |
| Age           | Deaths                   |        |                   | Nonfatal Hospital Stays  |        |                   | Nonfatal ED Visits |         |                   |
|               | Cause                    | Number | Rate <sup>1</sup> | Cause                    | Number | Rate <sup>1</sup> | Cause              | Number  | Rate <sup>1</sup> |
| 65 - 74 years | Fall                     | 44     | 9.8               | Fall                     | 4,148  | 920.6             | Fall               | 12,952  | 2,874.5           |
|               | Suicide                  | 29     | 6.4               | Poisoning                | 368    | 81.7              | Cut/pierce         | 2,520   | 559.3             |
|               | Poisoning                | 20     | 4.4               | MV-occupant <sup>4</sup> | 221    | 49.0              | Overexertion       | 2,168   | 481.2             |
|               | Suffocation              | 17     | 3.8               | Overexertion             | 171    | 38.0              | Struck by          | 2,081   | 461.8             |
|               | Other/unknown            | 82     | 18.2              | Other/unknown            | 2,962  | 657.4             | Other/unknown      | 9,495   | 2,107.3           |
|               | TOTAL <sup>5</sup>       | 192    | 42.6              | TOTAL <sup>5</sup>       | 7,870  | 1,746.6           | TOTAL <sup>5</sup> | 29,216  | 6,484.0           |
| Age           | Deaths                   |        |                   | Nonfatal Hospital Stays  |        |                   | Nonfatal ED Visits |         |                   |
|               | Cause                    | Number | Rate <sup>1</sup> | Cause                    | Number | Rate <sup>1</sup> | Cause              | Number  | Rate <sup>1</sup> |
| 75+ years     | Fall                     | 364    | 82.0              | Fall                     | 17,628 | 3,970.9           | Fall               | 27,879  | 6,280.0           |
|               | Suffocation              | 64     | 14.4              | Poisoning                | 517    | 116.5             | Struck by          | 2,759   | 621.5             |
|               | Suicide                  | 31     | 7.0               | MV-occupant <sup>4</sup> | 350    | 78.8              | Cut/pierce         | 2,088   | 470.3             |
|               | MV-occupant <sup>4</sup> | 22     | 5.0               | Overexertion             | 306    | 68.9              | Overexertion       | 1,821   | 410.2             |
|               | Other/unknown            | 191    | 43.0              | Other/unknown            | 6,851  | 1,543.3           | Other/unknown      | 9,939   | 2,238.9           |
|               | TOTAL <sup>5</sup>       | 672    | 151.4             | TOTAL <sup>5</sup>       | 25,652 | 5,778.4           | TOTAL <sup>5</sup> | 44,486  | 10,020.9          |

1. Causes of unintentional or undetermined intent are combined. Intentional injuries (suicides/self-inflicted injuries or homicides/assaults) are not broken down by cause.

2. Represents crude rates per 100,000 residents. Per DHCFP confidentiality rules, numbers and rates for less than 7 nonfatal injuries and rates for less than 5 deaths are suppressed.

Rates based on counts <20 may be unstable and should be interpreted with caution.

3. Pedal cyclist and pedestrian causes include both MV and non-MV related cases.

4. MV-occupants include unspecified persons, but not motorcyclists.

5. Total includes cases for which cause was unknown or missing.

Sources: Deaths - Registry of Vital Records and Statistics, MDPH; Nonfatal Injuries - MA Inpatient Hospital Discharge Database, MA Outpatient Observation Database, and MA Outpatient Emergency Department Database, Division of Health Care Finance and Policy

**Table 8. Charges for Injury Hospitalizations<sup>1</sup> by Intent and Cause, MA Residents, 2009**

| <b>INTENT AND CAUSE OF INJURY <sup>2</sup></b> | <b>Number</b> | <b>Median Charge</b> | <b>Total Charges</b>   |
|--|---------------|----------------------|------------------------|
| <b>UNINTENTIONAL</b>                           |               |                      |                        |
| Fall   | 29,472        | \$17,472             | \$745,505,765          |
| Motor Vehicle                                  | 3,738         | \$24,220             | \$175,155,990          |
| <i>Injury to occupant<sup>3</sup></i>          | 2,442         | \$22,892             | \$102,576,037          |
| <i>Injury to pedestrian</i>                    | 605           | \$26,347             | \$32,832,377           |
| <i>Injury to motorcyclist</i>                  | 507           | \$29,789             | \$30,783,501           |
| <i>Injury to pedal cyclist</i>                 | 159           | \$24,709             | \$8,089,711            |
| <i>Injury to other person</i>                  | 25            | \$16,879             | \$874,364              |
| Other Transport                                | 1,056         | \$17,813             | \$30,483,818           |
| <i>Pedal cyclist, other</i>                    | 445           | \$16,593             | \$11,231,369           |
| <i>Pedestrian, other</i>                       | 40            | \$25,773             | \$1,763,512            |
| <i>All Other transport</i>                     | 571           | \$18,405             | \$17,488,937           |
| Poisoning / overdose                           | 2,889         | \$10,560             | \$52,889,719           |
| Suffocation / hanging                          | 716           | \$22,925             | \$32,550,159           |
| Struck by / against                            | 1,337         | \$13,638             | \$29,052,499           |
| Fire / burn                                    | 534           | \$15,265             | \$20,127,696           |
| <i>Fire/flame</i>                              | 180           | \$16,579             | \$10,672,354           |
| <i>Hot object / substance burn</i>             | 354           | \$14,014             | \$9,455,342            |
| Natural / environmental                        | 1,210         | \$8,454              | \$18,720,566           |
| <i>Dog bite</i>                                | 190           | \$7,887              | \$2,125,379            |
| <i>Other bite or sting</i>                     | 524           | \$5,989              | \$4,785,225            |
| <i>All other</i>                               | 496           | \$13,188             | \$11,809,962           |
| Overexertion                                   | 930           | \$12,421             | \$16,463,846           |
| Cut / pierce                                   | 566           | \$11,533             | \$9,817,682            |
| Machinery                                      | 175           | \$22,849             | \$5,789,004            |
| Firearms                                       | 34            | \$16,906             | \$1,042,719            |
| Near drowning / submersion                     | 38            | \$11,509             | \$941,843              |
| Human bite                                     | 32            | \$8,570              | \$754,316              |
| Other specified causes                         | 2,874         | \$17,590             | \$82,953,394           |
| Unspecified / not classifiable                 | 4,660         | \$14,480             | \$109,713,378          |
| <b>Total Unintentional</b>                     | <b>50,261</b> | <b>\$16,575</b>      | <b>\$1,331,962,394</b> |

Hospital charge data is presented to provide an economic indicator associated with injuries. These are initial charges issued by the treating hospital. They do not necessarily reflect the amount that it costs the hospital to treat the patients, nor what is ultimately paid to the hospital by the insurer/payer. Final payment is typically less than initial charges, but such information is not included in the Division of Health Care Finance and Policy databases. This economic indicator does not take into account costs associated with long-term or rehabilitative care, nor other costs associated with injury and disability, such as lost wages.

1. Numbers presented here may not match other counts in this report for two reasons: First, cases where the patient died or was transferred to another acute care hospital are included. Second, cases where no charges were listed are excluded.

2. Causes for which there were less than 7 counts are not included.

3. Occupants include drivers, passengers and unspecified persons.

Source: MA Inpatient Hospital Discharge Database, Division of Health Care Finance and Policy

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**Table 10. Charges for Injury-related Hospitalizations<sup>1</sup> by Intent and Cause, MA Residents, 2009 (continued)**

| INTENT AND CAUSE OF INJURY <sup>2</sup> | Number        | Median Charge   | Total Charges          |
|---|---------------|-----------------|------------------------|
| <b>SELF-INFLICTED</b>                   |               |                 |                        |
| Poisoning / overdose                    | 3,670         | \$9,532         | \$59,669,861           |
| Cut / pierce                            | 524           | \$10,370        | \$9,838,612            |
| Fall                                    | 36            | \$52,196        | \$2,805,249            |
| Suffocation / hanging                   | 55            | \$17,115        | \$1,836,972            |
| Firearm                                 | 18            | \$66,458        | \$1,594,824            |
| Fire / burn                             | 23            | \$10,512        | \$480,123              |
| Motor Vehicle                           | 8             | \$30,672        | \$479,771              |
| Other specified causes                  | 16            | \$18,149        | \$707,077              |
| Unspecified / not classifiable          | 172           | \$14,123        | \$5,091,637            |
| <b>Total Self-Inflicted</b>             | <b>4,522</b>  | <b>\$9,912</b>  | <b>\$82,504,126</b>    |
| <b>ASSAULT</b>                          |               |                 |                        |
| Struck by / against                     | 657           | \$16,018        | \$16,576,499           |
| Firearm                                 | 276           | \$29,603        | \$16,107,564           |
| Cut / pierce                            | 459           | \$18,667        | \$13,567,070           |
| Fire / burn                             | 11            | \$14,763        | \$947,437              |
| Human bite                              | 49            | \$9,934         | \$691,161              |
| Motor Vehicle                           | 7             | \$14,502        | \$147,832              |
| Other specified causes                  | 163           | \$12,631        | \$4,034,991            |
| Unspecified / not classifiable          | 472           | \$17,209        | \$15,370,185           |
| <b>Total Assault</b>                    | <b>2,094</b>  | <b>\$17,380</b> | <b>\$67,442,739</b>    |
| <b>OTHER INJURY CASES</b>               |               |                 |                        |
| <b>Undetermined Intent</b>              | <b>864</b>    | <b>\$11,053</b> | <b>\$17,688,415</b>    |
| <b>Legal / War</b>                      | <b>56</b>     | <b>\$13,957</b> | <b>\$1,141,800</b>     |
| <b>Adverse Effects</b>                  | <b>3,330</b>  | <b>\$20,975</b> | <b>\$125,903,737</b>   |
| Cause / intent not provided             | 3,575         | \$15,405        | \$133,107,702          |
| Injuries with no charges listed         | 17            | na              | na                     |
| <b>TOTAL</b>                            | <b>64,719</b> | <b>\$16,039</b> | <b>\$1,759,750,913</b> |

Hospital charge data is presented to provide an economic indicator associated with injuries. These are initial charges issued by the treating hospital. They do not necessarily reflect the amount that it costs the hospital to treat the patients, nor what is ultimately paid to the hospital by the insurer/payer. Final payment is typically less than initial charges, but such information is not included in the Division of Health Care Finance and Policy databases. This economic indicator does not take into account costs associated with long-term or rehabilitative care, nor other costs associated with injury and disability, such as lost wages.

1. Observations stays are not included in this table. Counts include cases where the patient died or was transferred to another acute care hospital, but excludes cases where charge data is missing.

2. Causes for which there were less than 7 counts are not included.

Source: MA Inpatient Hospital Discharge Database, Division of Health Care Finance and Policy

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**Table 9. Fatal and Nonfatal Injury Cases by County, MA Residents, 2009**

|                                  | Deaths       | Nonfatal Injuries | Total          |                         |                                |
|----------------------------------|--------------|-------------------|----------------|-------------------------|--------------------------------|
| County <sup>1</sup>              | Number       | Number            | Total          | Crude Rate <sup>2</sup> | Age-adjusted Rate <sup>3</sup> |
| Barnstable                       | 134          | 32,371            | 32,505         | 14,698.1                | 16,251.1                       |
| Berkshire                        | 71           | 24,390            | 24,461         | 18,919.8                | 20,213.8                       |
| Bristol                          | 277          | 78,098            | 78,375         | 14,316.8                | 14,599.9                       |
| Dukes                            | 4            | 3,188             | 3,192          | 19,982.5                | 21,005.2                       |
| Essex                            | 328          | 91,898            | 92,226         | 12,419.6                | 12,669.8                       |
| Franklin                         | 26           | 10,221            | 10,247         | 14,276.0                | 15,121.3                       |
| Hampden                          | 231          | 64,844            | 65,075         | 13,814.0                | 14,052.1                       |
| Hampshire                        | 65           | 14,891            | 14,956         | 9,584.5                 | 10,844.1                       |
| Middlesex                        | 582          | 149,238           | 149,820        | 9,954.8                 | 10,013.5                       |
| Nantucket                        | 6            | 2,197             | 2,203          | 19,457.7                | 20,073.4                       |
| Norfolk                          | 269          | 70,258            | 70,527         | 10,584.8                | 10,679.6                       |
| Plymouth                         | 235          | 63,561            | 63,796         | 12,801.6                | 13,359.5                       |
| Suffolk                          | 344          | 76,510            | 76,854         | 10,198.5                | 10,390.3                       |
| Worcester                        | 348          | 93,784            | 94,132         | 11,712.3                | 11,929.0                       |
| <b>Massachusetts<sup>4</sup></b> | <b>2,920</b> | <b>775,783</b>    | <b>778,703</b> | <b>11,810.0</b>         | <b>11,898.3</b>                |

1. County was derived from city/town codes 1-351 for death data.

2. Represents crude rates per 100,000 residents using 2009 U.S. Census Estimates.

3. Age-adjusted rate is adjusted to the 2000 U.S. standard population using 2005 U.S. Census data from MassCHIP.

4. Massachusetts total includes cases of unknown town and homeless persons where no specific town was provided.

Sources: Deaths - Registry of Vital Records and Statistics, MDPH; Nonfatal Injuries - MA Inpatient Hospital Discharge Database, MA Outpatient Observation Database, and MA Outpatient Emergency Department Database, Division of Health Care Finance and Policy

[City and town names can be located by clicking on the county above \(excel format only\) or referring to "City and Town Listing by County" \(Appendix D\).](#)



## Regional Data: 2009

**Table 10. Fatal and Nonfatal Injury Cases for Selected Causes by County, MA Residents, 2009**

|                                  | Unintentional Motor Vehicle-related Injuries <sup>1</sup> |                   |                         | Unintentional Falls Among Older Adults (Ages 65+) |                   |                         | Unintentional Opioid Overdoses <sup>2</sup> |                   |                         | Homicides/Assaults |                   |                         | Suicides/Self-Inflicted Injuries |                   |                         |
|----------------------------------|---|-------------------|-------------------------|---|-------------------|-------------------------|---|-------------------|-------------------------|--------------------|-------------------|-------------------------|----------------------------------|-------------------|-------------------------|
| County <sup>3</sup>              | Deaths  | Nonfatal Injuries | Crude Rate <sup>4</sup> | Deaths  | Nonfatal Injuries | Crude Rate <sup>4</sup> | Deaths                                      | Nonfatal Injuries | Crude Rate <sup>4</sup> | Deaths             | Nonfatal Injuries | Crude Rate <sup>4</sup> | Deaths                           | Nonfatal Injuries | Crude Rate <sup>4</sup> |
| Barnstable                       | 16  | 2,645             | 1,203.3                 | 36  | 4,011             | 7,466.8                 | 20  | 101               | 54.7                    | 3                  | 845               | 383.4                   | 26                               | 259               | 128.9                   |
| Berkshire                        | 15  | 1,659             | 1,294.8                 | 15  | 2,013             | 8,470.5                 | 8   | 50                | 44.9                    | 2                  | 745               | 577.8                   | 10                               | 369               | 293.1                   |
| Bristol                          | 32  | 7,776             | 1,426.3                 | 25  | 5,593             | 7,367.2                 | 66  | 420               | 88.8                    | 19                 | 2,560             | 471.1                   | 63                               | 1130              | 217.9                   |
| Dukes                            | 1   | 168               | 1,058.0                 | 0   | 278               | 10,486.6                | 1   | 13                | 87.6                    | 0                  | 49                | 306.7                   | 1                                | 27                | 175.3                   |
| Essex                            | 43  | 8,378             | 1,134.0                 | 41  | 7,839             | 7,620.7                 | 69  | 400               | 63.2                    | 17                 | 2,908             | 393.9                   | 57                               | 1214              | 171.2                   |
| Franklin                         | 3   | 645               | 902.8                   | 3   | 708               | 6,803.8                 | 2   | 27                | 40.4                    | 1                  | 231               | 323.2                   | 4                                | 93                | 135.1                   |
| Hampden                          | 26  | 7,575             | 1,613.5                 | 23  | 4,446             | 6,770.7                 | 45  | 270               | 66.9                    | 22                 | 3,056             | 653.4                   | 53                               | 1059              | 236.1                   |
| Hampshire                        | 8   | 1,161             | 749.1                   | 6   | 1,346             | 6,774.2                 | 9   | 49                | 37.2                    | 2                  | 364               | 234.5                   | 18                               | 258               | 176.9                   |
| Middlesex                        | 74  | 12,507            | 835.9                   | 109   | 13,256            | 6,892.5                 | 113   | 599               | 47.3                    | 25                 | 4,294             | 287.0                   | 97                               | 1990              | 138.7                   |
| Nantucket                        | 0   | 72                | 635.9                   | 1   | 148               | 11,920.0                | 1   | 2                 | --                      | 1                  | 25                | 229.6                   | 3                                | 18                | 185.5                   |
| Norfolk                          | 36  | 5,788             | 874.1                   | 54  | 7,325             | 7,793.5                 | 64  | 302               | 54.9                    | 11                 | 1,905             | 287.6                   | 42                               | 878               | 138.1                   |
| Plymouth                         | 28  | 6,938             | 1,397.8                 | 21  | 4,664             | 7,006.2                 | 46  | 302               | 69.8                    | 15                 | 2,101             | 424.6                   | 49                               | 764               | 163.1                   |
| Suffolk                          | 20  | 8,616             | 1,146.0                 | 33  | 4,399             | 5,545.9                 | 91  | 609               | 92.9                    | 43                 | 5,427             | 725.9                   | 47                               | 1331              | 182.9                   |
| Worcester                        | 45  | 7,819             | 978.5                   | 41  | 6,565             | 6,538.9                 | 64  | 369               | 53.9                    | 19                 | 3,242             | 405.7                   | 61                               | 1947              | 182.5                   |
| <b>Massachusetts<sup>5</sup></b> | <b>347</b>  | <b>71,771</b>     | <b>1,093.8</b>          | <b>408</b>  | <b>62,605</b>     | <b>7,044.4</b>          | <b>599</b>                                  | <b>3,519</b>      | <b>62.5</b>             | <b>180</b>         | <b>27,777</b>     | <b>424.0</b>            | <b>531</b>                       | <b>11345</b>      | <b>180.1</b>            |

1. Includes unintentional motor vehicle traffic-related injuries to motor vehicle occupants (drivers or passengers), motorcyclists, and pedestrians or pedal cyclists struck by a motor vehicle

2. Includes opioid "poisonings" of unintentional or undetermined intent, including those related to prescription (e.g. oxycodone) or illegal opioids (e.g. heroin). Cases of opioid abuse or dependence may not be included

3. County was derived from city/town codes 1-351 for death data.

4. Represents crude rates per 100,000 residents. Rates based on counts <20 may be unstable and should be interpreted with caution.

Per DHCFP confidentiality rules, numbers and rates for less than 7 nonfatal injuries and rates for less than 5 deaths are suppressed.

5. Massachusetts total includes cases of unknown town and homeless persons where no specific town was provided.

Sources: Deaths - Registry of Vital Records and Statistics, MDPH; Nonfatal Injuries - MA Inpatient Hospital Discharge Database, MA Outpatient Observation Database, and MA Outpatient Emergency Department Database, Division of Health Care Finance and Policy

[City and town names can be located by clicking on the county above \(excel format only\) or referring to "City and Town Listing by County" \(Appendix D\).](#)



**Table 11. Fatal and Nonfatal Injury Cases by Community Health Network Area (CHNA), MA Residents, 2009**

| CHNA  | Deaths       | Nonfatal Injuries | Total          |                         |                                |
|---|--------------|-------------------|----------------|-------------------------|--------------------------------|
|   | Number       | Number            | Number         | Crude Rate <sup>2</sup> | Age-adjusted Rate <sup>3</sup> |
| 1. Community Health Network of Berkshire      | 71           | 24,390            | 24,461         | 18,536.0                | 18,965.0                       |
| 2. Upper Valley Health Web                    | 32           | 13,097            | 13,129         | 14,834.0                | 15,140.2                       |
| 3. Partnership for Health in Hampshire County | 65           | 14,553            | 14,618         | 9,629.6                 | 9,903.4                        |
| 4. The Community Health Connection            | 140          | 40,774            | 40,914         | 13,661.3                | 13,701.4                       |
| 5. South County Connects                      | 62           | 16,051            | 16,113         | 13,524.1                | 13,722.9                       |
| 6. Community Partners for Health              | 58           | 17,653            | 17,711         | 11,033.5                | 11,406.6                       |
| 7. Community Health Coalition of Metrowest    | 119          | 39,448            | 39,567         | 10,421.8                | 10,885.4                       |
| 8. Common Pathways                            | 124          | 35,746            | 35,870         | 11,812.2                | 11,712.2                       |
| 9. CHN of North Central Massachusetts         | 131          | 30,067            | 30,198         | 11,553.8                | 11,720.0                       |
| 10. The Greater Lowell CHN                    | 141          | 31,285            | 31,426         | 11,515.9                | 11,726.8                       |
| 11. The Greater Lawrence CHN                  | 66           | 23,852            | 23,918         | 12,254.6                | 12,214.8                       |
| 12. The Greater Haverhill CHN                 | 67           | 18,864            | 18,931         | 12,743.3                | 13,035.7                       |
| 13. The North Shore CHN (Beverly/Gloucester)  | 53           | 13,845            | 13,898         | 11,641.9                | 11,723.3                       |
| 14. The North Shore CHN (Salem/Lynn)          | 142          | 35,337            | 35,479         | 12,346.9                | 12,412.6                       |
| 15. Northwest Suburban Health Alliance        | 65           | 19,694            | 19,759         | 9,427.2                 | 9,869.2                        |
| 16. North Suburban Health Alliance            | 123          | 30,618            | 30,741         | 11,950.6                | 12,086.5                       |
| 17. The Greater Cambridge/Somerville CHNA     | 100          | 23,833            | 23,933         | 8,738.4                 | 8,885.7                        |
| 18. West Suburban Health Network              | 99           | 21,173            | 21,272         | 8,403.3                 | 8,293.3                        |
| 19. Boston Alliance for Community Health      | 348          | 80,887            | 81,235         | 11,415.6                | 11,323.2                       |
| 20. Blue Hills Community Health Alliance      | 178          | 41,647            | 41,825         | 11,233.9                | 11,346.8                       |
| 21. CHN of Chicopee/Holyoke/Ludlow/Westfield  | 86           | 23,436            | 23,522         | 14,568.9                | 14,570.6                       |
| 22. The Greater Brockton CHN                  | 119          | 31,435            | 31,554         | 13,017.2                | 12,980.9                       |
| 23. South Shore CHN                           | 87           | 23,314            | 23,401         | 12,395.5                | 12,738.9                       |
| 24. The Greater Attleboro-Taunton CHNA        | 95           | 32,726            | 32,821         | 12,976.8                | 13,255.1                       |
| 25. Partners for Healthier Communities        | 87           | 24,404            | 24,491         | 17,250.0                | 17,557.6                       |
| 26. Greater New Bedford CHN                   | 118          | 29,563            | 29,681         | 14,843.9                | 15,049.6                       |
| 27. Cape and Islands Health Network           | 144          | 37,756            | 37,900         | 15,027.6                | 15,335.7                       |
| <b>Massachusetts<sup>1</sup></b>              | <b>2,920</b> | <b>775,783</b>    | <b>778,703</b> | <b>11,810.0</b>         | <b>11,898.3</b>                |

1. Massachusetts total includes cases of unknown town and homeless persons where no specific town was provided.

2. Represents crude rates per 100,000 residents using 2009 U.S. Census Estimates.

3. Age-adjusted rate is adjusted to the 2000 U.S. standard population using 2005 U.S. Census data from MassCHIP.

4. Motor vehicle traffic-related injuries include: motor vehicle occupants (i.e., drivers and passengers of cars and light trucks), pedestrians and pedal cyclists injured by a motor vehicle, and motorcyclists.

5. Poisonings can include overdoses of prescription medicines, household cleaners, carbon monoxide poisoning, toxic effects of legal or illegal drugs, etc.

Sources: Deaths - Registry of Vital Records and Statistics, MDPH; Nonfatal Injuries - MA Inpatient Hospital Discharge Database, MA Outpatient Observation Database, and MA Outpatient Emergency Department Database, Division of Health Care Finance and Policy

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[City and town names can be located by clicking on each CHNA \(excel format only\) or referring to "City and Town Listing by CHNA" \(Appendix E\).](#)

**Table 12. Fatal and Nonfatal Injury Cases for Selected Causes by Community Health Network Area (CHNA), MA Residents, 2009**

| County  | Unintentional Motor Vehicle-related Injuries <sup>1</sup> |                   |                         | Unintentional Falls Among Older Adults (Ages 65+) |                   |                         | Unintentional Opioid Overdoses <sup>2</sup> |                   |                         | Homicides/Assaults |                   |                         | Suicides/Self-Inflicted Injuries |                   |                         |
|---|---|-------------------|-------------------------|---|-------------------|-------------------------|---|-------------------|-------------------------|--------------------|-------------------|-------------------------|----------------------------------|-------------------|-------------------------|
|   | Deaths  | Nonfatal Injuries | Crude Rate <sup>3</sup> | Deaths  | Nonfatal Injuries | Crude Rate <sup>3</sup> | Deaths                                      | Nonfatal Injuries | Crude Rate <sup>3</sup> | Deaths             | Nonfatal Injuries | Crude Rate <sup>3</sup> | Deaths                           | Nonfatal Injuries | Crude Rate <sup>3</sup> |
| 1. Community Health Network of Berkshire      | 15  | 1,659             | 1,294.8                 | 15  | 2,013             | 1,568.6                 | 8   | 50                | 48.0                    | 2                  | 745               | 577.8                   | 10                               | 369               | 293.1                   |
| 2. Upper Valley Health Web                    | 3   | 826               | 941.1                   | 3   | 884               | 1,006.9                 | 3   | 36                | 47.7                    | 1                  | 289               | 329.2                   | 7                                | 118               | 141.9                   |
| 3. Partnership for Health in Hampshire County | 8   | 1,136             | 743.7                   | 6   | 1,334             | 871.1                   | 9   | 49                | 44.9                    | 2                  | 354               | 231.4                   | 18                               | 256               | 178.1                   |
| 4. The Community Health Connection            | 12  | 5,011             | 1,669.4                 | 16  | 2,711             | 906.3                   | 25  | 175               | 74.1                    | 18                 | 2,155             | 722.2                   | 30                               | 662               | 230.0                   |
| 5. South County Connects                      | 14  | 1,305             | 1,091.9                 | 3   | 1,010             | 838.6                   | 14  | 51                | 62.9                    | 0                  | 395               | 327.0                   | 13                               | 241               | 210.3                   |
| 6. Community Partners for Health              | 11  | 1,306             | 800.1                   | 9   | 1,186             | 726.0                   | 8   | 43                | 34.0                    | 0                  | 324               | 196.8                   | 14                               | 191               | 124.5                   |
| 7. Community Health Coalition of Metrowest    | 18  | 2,896             | 748.2                   | 24  | 3,458             | 894.0                   | 15  | 93                | 31.8                    | 3                  | 878               | 226.2                   | 25                               | 628               | 167.7                   |
| 8. Common Pathways                            | 12  | 3,312             | 1,069.8                 | 13  | 2,393             | 774.3                   | 25  | 180               | 76.0                    | 8                  | 1,769             | 571.9                   | 17                               | 862               | 282.9                   |
| 9. CHN of North Central Massachusetts         | 18  | 2,378             | 892.4                   | 21  | 2,225             | 836.5                   | 23  | 108               | 57.7                    | 11                 | 847               | 319.6                   | 21                               | 711               | 272.6                   |
| 10. The Greater Lowell CHN                    | 20  | 3,085             | 1,123.5                 | 19  | 2,236             | 815.9                   | 33  | 133               | 66.2                    | 7                  | 1,171             | 426.2                   | 23                               | 421               | 160.6                   |
| 11. The Greater Lawrence CHN                  | 8   | 2,439             | 1,318.2                 | 5   | 1,612             | 871.1                   | 9   | 64                | 45.3                    | 10                 | 961               | 523.1                   | 11                               | 352               | 195.6                   |
| 12. The Greater Haverhill CHN                 | 9   | 1,397             | 920.8                   | 11  | 1,452             | 958.1                   | 15  | 46                | 45.8                    | 1                  | 498               | 326.8                   | 14                               | 241               | 167.0                   |
| 13. The N. Shore CHN (Beverly/Gloucester)     | 5   | 813               | 688.5                   | 7   | 1,327             | 1,122.8                 | 9   | 63                | 69.9                    | 0                  | 314               | 264.3                   | 15                               | 135               | 126.3                   |
| 14. The North Shore CHN (Salem/Lynn)          | 21  | 3,729             | 1,313.7                 | 18  | 3,448             | 1,214.2                 | 36  | 227               | 96.7                    | 6                  | 1,135             | 399.7                   | 17                               | 486               | 176.2                   |
| 15. Northwest Suburban Health Alliance        | 6   | 1,388             | 634.1                   | 16  | 2,337             | 1,070.4                 | 12  | 56                | 34.6                    | 1                  | 340               | 155.1                   | 12                               | 262               | 124.6                   |
| 16. North Suburban Health Alliance            | 19  | 2,982             | 1,146.1                 | 20  | 2,418             | 931.0                   | 34  | 206               | 96.2                    | 6                  | 897               | 344.8                   | 11                               | 325               | 128.3                   |
| 17. Greater Cambridge/Somerville CHNA         | 10  | 1,785             | 632.4                   | 25  | 2,055             | 732.9                   | 13  | 91                | 41.9                    | 6                  | 890               | 315.7                   | 24                               | 317               | 120.1                   |
| 18. West Suburban Health Network              | 14  | 1,357             | 530.6                   | 21  | 2,751             | 1,072.8                 | 11  | 49                | 25.5                    | 3                  | 402               | 156.7                   | 24                               | 229               | 97.9                    |
| 19. Boston Alliance for Community Health      | 20  | 8,892             | 1,100.3                 | 34  | 5,030             | 625.2                   | 91  | 615               | 94.1                    | 43                 | 5,518             | 686.5                   | 47                               | 1402              | 178.9                   |
| 20. Blue Hills Community Health Alliance      | 15  | 3,780             | 1,006.6                 | 36  | 4,662             | 1,246.1                 | 47  | 235               | 79.8                    | 10                 | 1,384             | 369.7                   | 14                               | 557               | 151.5                   |
| 21. CHN of Chicopee/Holyoke/Ludlow/Westfield  | 12  | 2,503             | 1,532.2                 | 6   | 1,692             | 1,034.5                 | 20  | 94                | 82.9                    | 4                  | 895               | 547.7                   | 21                               | 387               | 248.6                   |
| 22. The Greater Brockton CHN                  | 11  | 4,240             | 1,787.6                 | 12  | 1,791             | 758.2                   | 32  | 175               | 95.9                    | 13                 | 1,280             | 543.7                   | 20                               | 416               | 183.3                   |
| 23. South Shore CHN                           | 14  | 2,044             | 1,069.7                 | 5   | 1,959             | 1,020.8                 | 15  | 111               | 70.2                    | 0                  | 653               | 339.4                   | 25                               | 239               | 137.2                   |
| 24. The Greater Attleboro-Taunton CHNA        | 12  | 2,979             | 1,175.8                 | 8   | 2,123             | 837.7                   | 17  | 135               | 67.2                    | 5                  | 930               | 367.6                   | 27                               | 517               | 213.8                   |
| 25. Partners for Healthier Communities        | 9   | 2,404             | 1,710.7                 | 7   | 1,952             | 1,388.9                 | 28  | 154               | 143.9                   | 5                  | 735               | 524.6                   | 15                               | 307               | 228.3                   |
| 26. Greater New Bedford CHN                   | 14  | 3,216             | 1,620.3                 | 11  | 2,095             | 1,056.5                 | 25  | 158               | 107.9                   | 11                 | 1,074             | 544.3                   | 26                               | 402               | 214.7                   |
| 27. Cape and Islands Health Network           | 17  | 2,885             | 1,168.1                 | 37  | 4,437             | 1,800.8                 | 22  | 116               | 59.2                    | 4                  | 919               | 371.5                   | 30                               | 304               | 134.4                   |
| <b>Massachusetts<sup>4</sup></b>              | <b>347</b>  | <b>71,771</b>     | <b>1,093.8</b>          | <b>408</b>  | <b>62,605</b>     | <b>7,044.4</b>          | <b>599</b>                                  | <b>3,519</b>      | <b>63.3</b>             | <b>180</b>         | <b>27,777</b>     | <b>424.0</b>            | <b>531</b>                       | <b>11345</b>      | <b>180.1</b>            |

1. Includes unintentional motor vehicle traffic-related injuries to motor vehicle occupants (drivers or passengers), motorcyclists, and pedestrians or pedal cyclists struck by a motor vehicle.

2. Includes opioid "poisonings" of unintentional or undetermined intent, including those related to prescription (e.g. oxycodone) or illegal opioids (e.g. heroin). Cases of opioid abuse or dependence may not be included.

3. Crude rates include fatal and nonfatal injuries per 100,000 residents using 2005 U.S. Census data from MassCHIP.

4. Massachusetts total includes cases of unknown town and homeless persons where no specific town was provided.

Sources: Deaths - Registry of Vital Records and Statistics, MDPH; Nonfatal Injuries - MA Inpatient Hospital Discharge Database, MA Outpatient Observation Database, and MA Outpatient Emergency Department Database, Division of Health Care Finance and Policy

[City and town names can be located by clicking on each CHNA \(excel format only\) or referring to "City and Town Listing by CHNA" \(Appendix E\).](#)

# Trends Data: 2002–2009

**Table 13. Unintentional Fall-related Injury Rates<sup>1</sup> by Age Group, MA Residents, 2002-2009**

| Deaths                  | 2002    | 2003    | 2004    | 2005    | 2006    | 2007    | 2008    | 2009    | Annual % Change <sup>3</sup> |
|-------------------------|---------|---------|---------|---------|---------|---------|---------|---------|------------------------------|
| <1 year                 | --      | 0.0     | --      | 0.0     | 0.0     | 0.0     | --      | 0.0     | n.s.                         |
| 1-14 years              | --      | --      | --      | --      | --      | 0.0     | --      | --      | --                           |
| 15-24 years             | 0.6     | --      | --      | 0.8     | 0.5     | 0.8     | 0.5     | --      | n.s.                         |
| 25-44 years             | 0.7     | 1.0     | 0.8     | 0.5     | 0.7     | 1.1     | 0.7     | 0.9     | n.s.                         |
| 45-54 years             | 1.9     | 1.5     | 2.0     | 2.1     | 1.7     | 2.4     | 3.1     | 3.0     | +8.9%                        |
| 55-64 years             | 3.3     | 3.3     | 4.7     | 3.4     | 4.4     | 5.3     | 4.5     | 4.2     | n.s.                         |
| 65-74 years             | 6.7     | 4.6     | 8.1     | 6.6     | 13.7    | 14.7    | 14.9    | 9.8     | +14.1%                       |
| 75-84 years             | 20.3    | 22.6    | 25.3    | 26.8    | 37.1    | 41.3    | 43.1    | 48.0    | +14.1%                       |
| 85+ years               | 56.1    | 76.3    | 67.4    | 71.5    | 123.5   | 125.2   | 141.2   | 154.5   | +16.1%                       |
| Total <sup>2</sup>      | 3.5     | 3.9     | 4.2     | 4.1     | 6.3     | 7.0     | 7.4     | 7.4     | +13.2%                       |
| Nonfatal Hospital Stays | 2002    | 2003    | 2004    | 2005    | 2006    | 2007    | 2008    | 2009    | Annual % Change <sup>3</sup> |
| <1 year                 | 188.2   | 192.3   | 217.8   | 249.5   | 218.1   | 204.9   | 244.5   | 229.3   | n.s.                         |
| 1-14 years              | 103.1   | 107.9   | 103.6   | 99.0    | 98.5    | 83.2    | 84.5    | 88.9    | -3.4%                        |
| 15-24 years             | 81.8    | 83.7    | 79.0    | 75.6    | 73.6    | 67.1    | 79.6    | 78.0    | n.s.                         |
| 25-44 years             | 106.3   | 128.9   | 120.8   | 118.4   | 117.2   | 105.4   | 124.1   | 115.5   | n.s.                         |
| 45-54 years             | 194.4   | 242.6   | 221.6   | 236.9   | 236.9   | 219.0   | 249.1   | 262.5   | n.s.                         |
| 55-64 years             | 344.7   | 397.2   | 401.1   | 404.7   | 389.3   | 387.6   | 431.7   | 438.2   | +2.4%                        |
| 65-74 years             | 817.4   | 859.8   | 861.5   | 874.4   | 873.8   | 863.3   | 914.4   | 920.4   | +1.4%                        |
| 75-84 years             | 2,333.2 | 2,489.1 | 2,523.5 | 2,533.1 | 2,676.2 | 2,629.1 | 2,661.9 | 2,762.3 | +2.0%                        |
| 85+ years               | 5,852.1 | 6,051.4 | 6,060.7 | 5,895.0 | 6,098.0 | 6,003.7 | 6,190.2 | 6,548.0 | +1.1%                        |
| Total <sup>2</sup>      | 404.8   | 442.6   | 440.9   | 443.5   | 454.9   | 442.6   | 469.9   | 482.9   | +1.9%                        |
| Nonfatal ED Visits      | 2002    | 2003    | 2004    | 2005    | 2006    | 2007    | 2008    | 2009    | Annual % Change <sup>3</sup> |
| <1 year                 | 2,873.7 | 2,908.0 | 3,014.6 | 3,014.1 | 3,238.7 | 3,176.1 | 3,241.8 | 3,600.8 | +2.8%                        |
| 1-14 years              | 3,945.0 | 3,873.8 | 3,682.3 | 3,577.7 | 3,773.9 | 3,856.5 | 3,873.2 | 3,958.3 | n.s.                         |
| 15-24 years             | 2,344.7 | 2,427.8 | 2,189.2 | 2,153.5 | 2,181.7 | 2,207.9 | 2,352.9 | 2,353.8 | n.s.                         |
| 25-44 years             | 2,014.6 | 2,243.2 | 2,060.5 | 2,072.3 | 2,070.7 | 2,075.8 | 2,224.0 | 2,255.6 | n.s.                         |
| 45-54 years             | 1,928.4 | 2,217.4 | 2,082.2 | 2,099.8 | 2,096.8 | 2,167.2 | 2,345.2 | 2,438.1 | +2.5%                        |
| 55-64 years             | 1,983.9 | 2,291.5 | 2,196.6 | 2,137.7 | 2,200.4 | 2,172.0 | 2,362.3 | 2,430.2 | +1.9%                        |
| 65-74 years             | 2,494.2 | 2,747.5 | 2,686.0 | 2,609.3 | 2,633.6 | 2,647.7 | 2,764.1 | 2,874.3 | n.s.                         |
| 75-84 years             | 4,547.3 | 4,659.1 | 4,692.1 | 4,605.1 | 4,815.9 | 4,907.8 | 5,073.6 | 5,097.5 | +1.7%                        |
| 85+ years               | 8,243.5 | 7,979.9 | 8,080.6 | 7,921.7 | 8,077.8 | 8,159.5 | 8,163.0 | 8,801.7 | n.s.                         |
| Total <sup>2</sup>      | 2,681.1 | 2,835.1 | 2,684.2 | 2,646.5 | 2,705.6 | 2,736.6 | 2,863.3 | 2,931.4 | n.s.                         |

Overall unintentional fall death rates increased 13.2% per year between 2002 and 2009. This was partly due to increased identification of fall deaths by the Medical Examiner's Office after 2005.

The greatest increases in fall death rates were seen in age groups 65 and over (14.1% to 16.1% per year).

Overall hospital stay rates for unintentional fall injuries increased 1.9% per year between 2002 and 2009.

Hospital stay rates for unintentional fall injuries decreased 3.4% per year among children ages 1-14 years, but increased slightly among all age groups ages 65 and over (1.1% to 2.4% per year).

Overall rates of ED visits for unintentional fall injuries did not change significantly between 2002 and 2009. However, increased ED visit rates were seen in certain age groups, including children under age 1 year (2.8% per year).

1. Rates for age groups are age-specific (i.e., number of cases per 100,000 persons in that age group). 2009 rates are based on population data from 2009 U.S. Census Estimates.

2. Rates for total counts are crude rates per 100,000 persons. Totals includes cases for which age was unknown or missing.

3. Average Annual Percent Change (AAPC) between 2002 and 2009. AAPC only presented if statistically significant at  $p < .05$ ; n.s. = not significant.

Rates are suppressed for nonfatal injuries with counts of less than 7 and for deaths with counts less than 5. Rates based on counts less than 20 may be unstable.

Sources: Deaths - Registry of Vital Records and Statistics, MDPH. Nonfatal Injuries - MA Inpatient Hospital Discharge Database,

MA Outpatient Observation Database, and MA Outpatient Emergency Department Database, Division of Health Care Finance and Policy

**Table 14. Unintentional Motor Vehicle-related<sup>1</sup> Injury Rates<sup>2</sup> by Age Group, MA Residents, 2002-2009**

| Deaths                  | 2002    | 2003    | 2004    | 2005    | 2006    | 2007    | 2008    | 2009    | Annual % Change <sup>4</sup> |
|-------------------------|---------|---------|---------|---------|---------|---------|---------|---------|------------------------------|
| <1 year                 | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     | --      | 0.0     | n.s.                         |
| 1-14 years              | 0.4     | 1.5     | 1.7     | 0.9     | 1.0     | 0.5     | 0.5     | 0.7     | n.s.                         |
| 15-24 years             | 14.9    | 14.5    | 14.6    | 12.5    | 12.4    | 14.2    | 9.4     | 9.4     | -6.3%                        |
| 25-44 years             | 8.6     | 7.6     | 7.8     | 6.4     | 6.2     | 6.3     | 4.0     | 5.2     | -8.4%                        |
| 45-64 years             | 7.0     | 6.1     | 7.4     | 6.9     | 7.0     | 5.2     | 5.1     | 5.2     | -4.7%                        |
| 65-74 years             | 9.6     | 10.2    | 5.9     | 9.3     | 7.8     | 7.7     | 5.4     | 6.4     | n.s.                         |
| 75-84 years             | 18.5    | 19.5    | 14.5    | 10.8    | 12.6    | 7.2     | 11.4    | 7.3     | -12.4%                       |
| 85+ years               | 13.0    | 15.0    | 20.2    | 15.8    | 15.4    | 12.9    | 16.8    | 9.2     | n.s.                         |
| Total <sup>3</sup>      | 8.1     | 7.9     | 7.9     | 6.9     | 6.9     | 6.3     | 5.1     | 5.3     | -6.7%                        |
| Nonfatal Hospital Stays | 2002    | 2003    | 2004    | 2005    | 2006    | 2007    | 2008    | 2009    | Annual % Change <sup>4</sup> |
| <1 year                 | 7.6     | 10.2    | 9.0     | 13.2    | --      | --      | --      | --      | --                           |
| 1-14 years              | 27.5    | 26.0    | 27.7    | 21.5    | 22.3    | 18.3    | 19.4    | 17.7    | -6.6%                        |
| 15-24 years             | 174.0   | 157.5   | 166.3   | 153.0   | 146.3   | 119.8   | 110.2   | 106.3   | -7.2%                        |
| 25-44 years             | 90.4    | 89.0    | 88.9    | 88.0    | 82.4    | 71.4    | 72.6    | 68.5    | -4.3%                        |
| 45-64 years             | 72.9    | 68.8    | 71.0    | 74.6    | 71.2    | 68.0    | 65.9    | 63.5    | -1.6%                        |
| 65-74 years             | 85.8    | 82.6    | 82.5    | 85.1    | 80.3    | 69.4    | 71.6    | 68.8    | -3.3%                        |
| 75-84 years             | 143.4   | 128.3   | 132.5   | 119.6   | 127.4   | 116.4   | 115.4   | 104.9   | -3.6%                        |
| 85+ years               | 134.3   | 121.4   | 107.0   | 114.7   | 109.9   | 98.7    | 111.8   | 84.7    | -4.6%                        |
| Total <sup>3</sup>      | 88.0    | 83.2    | 85.3    | 83.0    | 79.8    | 70.1    | 69.2    | 65.2    | -4.3%                        |
| Nonfatal ED Visits      | 2002    | 2003    | 2004    | 2005    | 2006    | 2007    | 2008    | 2009    | Annual % Change <sup>4</sup> |
| <1 year                 | 84.3    | 100.4   | 100.4   | 111.0   | 103.5   | 115.1   | 61.1    | 86.8    | n.s.                         |
| 1-14 years              | 556.6   | 543.0   | 482.9   | 450.0   | 413.9   | 373.7   | 339.4   | 330.7   | -7.8%                        |
| 15-24 years             | 3,777.3 | 3,721.8 | 3,312.3 | 2,907.9 | 2,582.3 | 2,399.8 | 2,166.5 | 2,074.1 | -9.1%                        |
| 25-44 years             | 2,127.4 | 2,176.7 | 1,982.5 | 1,825.1 | 1,656.8 | 1,542.3 | 1,504.2 | 1,476.0 | -6.1%                        |
| 45-64 years             | 1,037.7 | 1,068.9 | 971.5   | 912.4   | 856.4   | 820.2   | 795.0   | 805.8   | -4.5%                        |
| 65-74 years             | 576.0   | 604.8   | 594.8   | 541.0   | 522.1   | 483.5   | 440.4   | 462.1   | -4.4%                        |
| 75-84 years             | 547.6   | 552.8   | 531.4   | 457.7   | 449.4   | 444.9   | 432.0   | 378.9   | -5.1%                        |
| 85+ years               | 336.0   | 279.1   | 306.4   | 264.8   | 310.5   | 271.9   | 243.9   | 278.7   | n.s.                         |
| Total <sup>3</sup>      | 1,564.3 | 1,578.1 | 1,430.1 | 1,301.5 | 1,187.0 | 1,108.3 | 1,047.4 | 1,023.3 | -6.8%                        |

The overall death rate from unintentional MV-related injuries decreased 6.7% per year between 2002 and 2009.

MV-related death rates decreased the most among adults ages 75-84 years (down 12.4% per year).

The overall rate of hospital stays for MV-related injuries decreased 4.3% per year between 2002 and 2009.

Hospital stay rates decreased the most among young adults ages 15-24 (down 7.2% per year) and children ages 1-14 (down 6.6% per year).

The overall rate of ED visits for MV-related injuries decreased by 6.8% per year between 2002 and 2009.

The greatest decreases in ED visit rates also occurred among young adults ages 15-24 (down 9.1% per year) and children ages 1-14 (down 7.8% per year).

1. Includes unintentional motor vehicle traffic-related injuries to motor vehicle occupants (drivers or passengers), motorcyclists, and pedestrians or pedal cyclists struck by a motor vehicle.

2. Rates for age groups are age-specific (i.e., number of cases per 100,000 persons in that age group). 2009 rates are based on population data from 2009 U.S. Census Estimates.

3. Rates for total counts are crude rates per 100,000 persons. Totals includes cases for which age was unknown or missing.

4. Average Annual Percent Change (AAPC) between 2002 and 2009. AAPC only presented if statistically significant at  $p < .05$ ; n.s. = not significant.

Rates are suppressed for nonfatal injuries with counts of less than 7 and for deaths with counts less than 5. Rates based on counts less than 20 may be unstable.

Sources: Deaths - Registry of Vital Records and Statistics, MDPH. Nonfatal Injuries - MA Inpatient Hospital Discharge Database, MA Outpatient Observation Database, and MA Outpatient Emergency Department Database, Division of Health Care Finance and Policy

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**Table 15. Unintentional Traumatic Brain Injury Rates<sup>1</sup> by Age Group, MA Residents, 2002-2009**

| Deaths                  | 2002    | 2003    | 2004    | 2005    | 2006    | 2007    | 2008    | 2009    | Annual % Change <sup>3</sup> |
|-------------------------|---------|---------|---------|---------|---------|---------|---------|---------|------------------------------|
| <1 year                 | 0.0     | 0.0     | --      | 0.0     | --      | 0.0     | --      | 0.0     | --                           |
| 1-14 years              | 0.6     | 0.7     | 0.7     | 0.5     | 1.1     | --      | 0.9     | 0.9     | n.s.                         |
| 15-24 years             | 6.7     | 5.3     | 4.9     | 7.1     | 8.0     | 10.5    | 7.9     | 7.1     | n.s.                         |
| 25-44 years             | 3.0     | 2.5     | 2.2     | 3.1     | 3.9     | 5.6     | 3.8     | 4.8     | +10.5%                       |
| 45-64 years             | 4.1     | 2.8     | 4.4     | 4.5     | 6.1     | 7.3     | 5.9     | 6.7     | +11.3%                       |
| 65-74 years             | 8.7     | 6.8     | 8.1     | 7.8     | 13.2    | 15.7    | 12.4    | 14.4    | +11.4%                       |
| 75-84 years             | 22.9    | 18.9    | 19.3    | 25.2    | 28.8    | 32.6    | 37.1    | 36.4    | +10.4%                       |
| 85+ years               | 48.8    | 57.5    | 55.1    | 59.6    | 74.0    | 67.3    | 86.7    | 86.1    | +8.5%                        |
| Total <sup>2</sup>      | 5.5     | 4.8     | 5.1     | 6.1     | 7.8     | 9.1     | 8.4     | 8.8     | +10.1%                       |
| Nonfatal Hospital Stays | 2002    | 2003    | 2004    | 2005    | 2006    | 2007    | 2008    | 2009    | Annual % Change <sup>3</sup> |
| <1 year                 | 195.1   | 205.8   | 235.5   | 235.2   | 214.9   | 214.4   | 244.5   | 241.0   | n.s.                         |
| 1-14 years              | 42.6    | 46.3    | 44.0    | 43.6    | 44.2    | 37.3    | 38.8    | 40.1    | n.s.                         |
| 15-24 years             | 85.3    | 92.4    | 92.2    | 92.1    | 86.8    | 72.7    | 69.2    | 74.6    | -3.7%                        |
| 25-44 years             | 46.9    | 48.1    | 48.7    | 50.2    | 50.1    | 40.9    | 42.6    | 41.8    | n.s.                         |
| 45-64 years             | 52.6    | 55.0    | 61.4    | 71.1    | 65.4    | 65.0    | 65.5    | 73.1    | +4.0%                        |
| 65-74 years             | 97.6    | 112.7   | 120.8   | 120.4   | 132.5   | 136.1   | 133.8   | 147.6   | +5.1%                        |
| 75-84 years             | 222.9   | 241.5   | 287.7   | 269.8   | 336.9   | 346.9   | 349.4   | 395.8   | +8.2%                        |
| 85+ years               | 454.8   | 517.1   | 553.8   | 558.2   | 607.9   | 628.2   | 629.6   | 757.8   | +6.2%                        |
| Total <sup>2</sup>      | 74.2    | 80.2    | 85.7    | 88.0    | 91.0    | 86.5    | 87.4    | 95.9    | +2.8%                        |
| Nonfatal ED Visits      | 2002    | 2003    | 2004    | 2005    | 2006    | 2007    | 2008    | 2009    | Annual % Change <sup>3</sup> |
| <1 year                 | 1,483.9 | 1,599.4 | 1,700.9 | 1,848.3 | 2,020.2 | 2,051.1 | 2,165.9 | 2,555.2 | +7.4%                        |
| 1-14 years              | 689.8   | 727.3   | 732.0   | 775.0   | 848.6   | 897.4   | 992.1   | 1,201.2 | +7.6%                        |
| 15-24 years             | 692.5   | 727.3   | 738.5   | 777.2   | 820.6   | 833.6   | 918.2   | 1,008.4 | +5.1%                        |
| 25-44 years             | 317.0   | 348.9   | 359.6   | 384.1   | 405.3   | 426.4   | 471.3   | 549.6   | +7.3%                        |
| 45-64 years             | 232.9   | 271.8   | 283.3   | 313.7   | 348.3   | 380.3   | 433.9   | 513.2   | +11.1%                       |
| 65-74 years             | 263.0   | 307.5   | 345.0   | 372.2   | 426.9   | 487.9   | 529.9   | 620.3   | +12.5%                       |
| 75-84 years             | 521.9   | 581.4   | 621.2   | 724.3   | 896.2   | 1,027.9 | 1,177.3 | 1,251.8 | +14.5%                       |
| 85+ years               | 1,019.5 | 1,082.4 | 1,258.1 | 1,431.0 | 1,716.0 | 1,872.6 | 2,035.0 | 2,350.4 | +13.2%                       |
| Total <sup>2</sup>      | 449.3   | 487.6   | 504.5   | 543.5   | 596.4   | 633.8   | 703.4   | 811.8   | +8.4%                        |

The overall death rate associated with traumatic brain injury (TBI) increased 10.1% per year between 2002 and 2009.

All age groups ages 25 and over experienced significant increases in TBI death rates (from 8.5% to 11.4% per year).

The overall TBI-related hospital stay rate increased 2.8% per year between 2002 and 2009.

Rates of TBI-related hospital stays did not change significantly or decreased for age groups under age 45. TBI-related hospital stay rates increased for age groups over age 45, with the greatest increase in adults 75-84 years (8.2% per year).

The overall rate of TBI-related ED visits increased 8.4% per year between 2002 and 2009.

TBI-related ED visit rates increased significantly in all age groups. The greatest increases over this time period occurred in age groups ages 65 and over (12.5% to 14.5% per year).

1. Rates for age groups are age-specific (i.e., number of cases per 100,000 persons in that age group). 2009 rates are based on population data from 2009 U.S. Census Estimates.

2. Rates for total counts are crude rates per 100,000 persons. Totals includes cases for which age was unknown or missing.

3. Average Annual Percent Change (AAPC) between 2002 and 2009. AAPC only presented if statistically significant at  $p < .05$ ; n.s. = not significant.

Rates are suppressed for nonfatal injuries with counts of less than 7 and for deaths with counts less than 5. Rates based on counts less than 20 may be unstable.

Sources: Deaths - Registry of Vital Records and Statistics, MDPH. Nonfatal Injuries - MA Inpatient Hospital Discharge Database,

MA Outpatient Observation Database, and MA Outpatient Emergency Department Database, Division of Health Care Finance and Policy

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**Table 16. Unintentional Opioid Overdose<sup>1</sup> Rates<sup>2</sup> by Age Group, MA Residents, 2002-2009**

| Deaths                  | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | Annual % Change <sup>4</sup> |
|-------------------------|------|------|------|------|------|------|------|------|------------------------------|
| <1 year                 | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | --   | --                           |
| 1-14 years              | 0.0  | 0.0  | --   | 0.0  | 0.0  | 0.0  | 0.0  | --   | --                           |
| 15-24 years             | 4.7  | 7.6  | 7.3  | 6.7  | 6.2  | 5.3  | 5.1  | 6.4  | n.s.                         |
| 25-44 years             | 13.3 | 17.2 | 13.7 | 15.2 | 16.9 | 17.4 | 16.0 | 16.4 | n.s.                         |
| 45-64 years             | 8.3  | 9.5  | 8.0  | 11.0 | 14.5 | 14.1 | 12.4 | 12.9 | +7.9%                        |
| 65-74 years             | --   | --   | --   | --   | --   | 1.2  | 1.1  | 1.8  | n.s.                         |
| 75-84 years             | --   | 0.0  | 0.0  | --   | --   | --   | --   | --   | --                           |
| 85+ years               | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | --   | --   | --   | --                           |
| Total <sup>3</sup>      | 6.7  | 8.5  | 7.1  | 8.1  | 9.5  | 9.4  | 8.6  | 9.1  | +3.9%                        |
| Nonfatal Hospital Stays | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | Annual % Change <sup>4</sup> |
| <1 year                 | --   | 0.0  | 0.0  | 0.0  | --   | --   | --   | --   | --                           |
| 1-14 years              | 0.8  | --   | --   | --   | 0.7  | --   | 1.1  | 1.5  | n.s.                         |
| 15-24 years             | 9.6  | 13.0 | 12.0 | 11.3 | 9.6  | 9.6  | 7.6  | 9.5  | n.s.                         |
| 25-44 years             | 16.0 | 17.9 | 16.4 | 15.8 | 18.9 | 15.0 | 17.5 | 18.8 | n.s.                         |
| 45-64 years             | 11.0 | 13.1 | 15.2 | 15.9 | 16.4 | 18.4 | 19.4 | 23.6 | +9.9%                        |
| 65-74 years             | 7.7  | 6.0  | 9.5  | 13.7 | 16.3 | 15.7 | 14.2 | 15.1 | +13.6%                       |
| 75-84 years             | 8.7  | 7.5  | 8.5  | 7.9  | 9.3  | 13.9 | 13.0 | 14.6 | +10.0%                       |
| 85+ years               | 9.9  | 8.1  | 6.4  | 8.6  | 5.3  | 12.6 | 10.1 | 13.4 | n.s.                         |
| Total <sup>3</sup>      | 10.0 | 11.2 | 11.4 | 11.7 | 12.7 | 12.5 | 13.1 | 15.2 | +5.0%                        |
| Nonfatal ED Visits      | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | Annual % Change <sup>4</sup> |
| <1 year                 | 0.0  | --   | --   | 0.0  | --   | --   | --   | --   | --                           |
| 1-14 years              | 2.6  | 2.0  | 2.4  | 2.2  | 2.4  | 2.5  | 3.7  | 3.1  | n.s.                         |
| 15-24 years             | 42.2 | 47.1 | 54.4 | 55.3 | 54.9 | 58.4 | 62.5 | 63.1 | +5.4%                        |
| 25-44 years             | 54.0 | 61.0 | 56.0 | 52.2 | 58.1 | 58.7 | 66.3 | 75.4 | +3.6%                        |
| 45-64 years             | 18.8 | 25.6 | 24.7 | 23.9 | 23.6 | 24.9 | 25.5 | 28.7 | +3.6%                        |
| 65-74 years             | 2.6  | 1.7  | 2.4  | 3.4  | 2.9  | 2.6  | 4.8  | 2.9  | n.s.                         |
| 75-84 years             | 4.1  | --   | 2.5  | 2.2  | 4.2  | --   | 2.9  | 6.0  | n.s.                         |
| 85+ years               | --   | --   | --   | 10.9 | --   | 6.7  | 6.5  | --   | n.s.                         |
| Total <sup>3</sup>      | 27.3 | 31.3 | 30.8 | 29.6 | 31.2 | 32.0 | 35.1 | 38.2 | +3.8%                        |

Between 2002 and 2009, the overall rate of fatal opioid overdoses of unintentional/undetermined intent increased 3.9% per year.

Rates of fatal opioid overdoses of unintentional/undetermined intent increased the most among MA residents ages 45-64 years (7.9 % per year).

The overall hospital stay rate for opioid overdoses of unintentional/undetermined intent increased 5.0% between 2002 and 2009.

This increase in hospital stay rates occurred mainly among age groups between 45 and 84 years (increases from 9.9% to 13.6% per year).

The overall rate of ED visits for opioid overdoses of unintentional/undetermined intent increased 3.7% per year between 2002 and 2009.

This increase in ED visit rates occurred primarily among age groups between 15 and 64 years (increases from 3.6% to 5.4% per year).

1. Includes opioid "poisonings" of unintentional or undetermined intent, including those related to prescription (e.g. oxycodone) or illegal opioids (e.g. heroin).

Cases of opioid abuse or dependence may not be included.

2. Rates for age groups are age-specific (i.e., number of cases per 100,000 persons in that age group). 2009 rates are based on population data from 2009 U.S. Census Estimates.

3. Rates for total counts are crude rates per 100,000 persons. Totals includes cases for which age was unknown or missing.

4. Average Annual Percent Change (AAPC) between 2002 and 2009. AAPC only presented if statistically significant at  $p < .05$ ; n.s. = not significant.

Rates are suppressed for nonfatal injuries with counts of less than 7 and for deaths with counts less than 5. Rates based on counts less than 20 may be unstable.

Sources: Deaths - Registry of Vital Records and Statistics, MDPH. Nonfatal Injuries - MA Inpatient Hospital Discharge Database,

MA Outpatient Observation Database, and MA Outpatient Emergency Department Database, Division of Health Care Finance and Policy

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**Table 17. Suicide and Self-inflicted Injury Rates<sup>1</sup> by Age Group, MA Residents, 2002-2009**

| Deaths                  | 2002  | 2003  | 2004  | 2005  | 2006  | 2007  | 2008  | 2009  | Annual % Change <sup>3</sup> |
|-------------------------|-------|-------|-------|-------|-------|-------|-------|-------|------------------------------|
| <1 year                 | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | --                           |
| 1-14 years              | 0.0   | 0.4   | --    | --    | --    | --    | --    | --    | --                           |
| 15-19 years             | 3.3   | 4.8   | 4.3   | 4.0   | 2.4   | 4.2   | 4.1   | 4.1   | n.s.                         |
| 20-24 years             | 9.3   | 5.8   | 7.4   | 8.1   | 7.1   | 6.8   | 5.4   | 6.7   | n.s.                         |
| 25-44 years             | 8.9   | 9.2   | 8.8   | 9.8   | 8.7   | 10.7  | 9.8   | 10.0  | n.s.                         |
| 45-64 years             | 9.0   | 8.7   | 8.8   | 9.6   | 11.2  | 11.0  | 12.0  | 13.3  | +6.3%                        |
| 65-74 years             | 6.7   | 6.8   | 7.1   | 8.3   | 5.6   | 8.4   | 7.7   | 6.4   | n.s.                         |
| 75-84 years             | 8.1   | 6.3   | 8.2   | 8.9   | 4.8   | 6.2   | 7.4   | 8.3   | n.s.                         |
| 85+ years               | 7.3   | 9.5   | 10.9  | 9.1   | 5.1   | 11.4  | 7.7   | 4.2   | n.s.                         |
| Total <sup>2</sup>      | 6.6   | 6.6   | 6.7   | 7.3   | 6.8   | 7.8   | 7.7   | 8.1   | +3.1%                        |
| Nonfatal Hospital Stays | 2002  | 2003  | 2004  | 2005  | 2006  | 2007  | 2008  | 2009  | Annual % Change <sup>3</sup> |
| <1 year                 | --    | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | --                           |
| 1-14 years              | 8.9   | 11.3  | 11.4  | 9.8   | 6.2   | 5.1   | 7.2   | 7.3   | n.s.                         |
| 15-19 years             | 128.0 | 130.4 | 105.2 | 114.3 | 113.6 | 99.5  | 108.0 | 106.2 | -2.8%                        |
| 20-24 years             | 119.7 | 121.2 | 123.6 | 110.5 | 116.6 | 114.2 | 110.1 | 133.1 | n.s.                         |
| 25-44 years             | 101.8 | 109.3 | 108.2 | 108.4 | 112.8 | 109.1 | 110.1 | 110.4 | n.s.                         |
| 45-64 years             | 54.3  | 58.2  | 60.8  | 64.9  | 67.8  | 66.0  | 72.9  | 74.2  | +4.4%                        |
| 65-74 years             | 16.8  | 19.1  | 14.6  | 19.6  | 21.5  | 25.1  | 18.7  | 20.2  | n.s.                         |
| 75-84 years             | 12.5  | 16.3  | 14.2  | 23.6  | 15.5  | 18.7  | 16.4  | 17.5  | n.s.                         |
| 85+ years               | 13.0  | 15.0  | 24.0  | 19.6  | 16.1  | 17.2  | 17.5  | 16.2  | n.s.                         |
| Total <sup>2</sup>      | 63.7  | 68.0  | 66.5  | 67.8  | 69.2  | 66.7  | 68.9  | 70.8  | +1.0%                        |
| Nonfatal ED Visits      | 2002  | 2003  | 2004  | 2005  | 2006  | 2007  | 2008  | 2009  | Annual % Change <sup>3</sup> |
| <1 year                 | --    | --    | --    | --    | 0.0   | --    | --    | --    | --                           |
| 1-14 years              | 36.0  | 41.4  | 51.6  | 45.6  | 43.8  | 35.5  | 37.6  | 37.1  | n.s.                         |
| 15-19 years             | 340.3 | 348.2 | 361.0 | 374.7 | 349.2 | 332.2 | 354.9 | 329.6 | n.s.                         |
| 20-24 years             | 228.7 | 228.3 | 223.1 | 256.3 | 244.1 | 241.8 | 237.6 | 235.8 | n.s.                         |
| 25-44 years             | 142.6 | 133.3 | 136.1 | 145.0 | 153.9 | 151.7 | 136.2 | 144.5 | n.s.                         |
| 45-64 years             | 50.0  | 47.9  | 54.5  | 54.8  | 56.4  | 55.4  | 60.6  | 55.6  | +2.4%                        |
| 65-74 years             | 6.7   | 5.3   | 5.6   | 7.6   | 9.0   | 7.5   | 10.5  | 9.5   | +8.6%                        |
| 75-84 years             | 5.6   | 5.7   | 4.4   | 4.1   | 5.8   | 4.9   | 6.0   | 5.0   | n.s.                         |
| 85+ years               | --    | 6.3   | 5.4   | 6.8   | 6.6   | --    | 7.7   | --    | --                           |
| Total <sup>2</sup>      | 100.2 | 98.3  | 103.1 | 108.2 | 108.3 | 104.2 | 103.3 | 101.2 | n.s.                         |

The overall suicide rate increased 3.1% per year among MA residents between 2002 and 2009.

Suicide rates increased primarily among MA residents ages 45-64, for whom rates increased 6.3% per year.

The overall hospital stay rate for nonfatal self-inflicted injuries increased 1.0% per year between 2002 and 2009, although the only age group for which these rates increased significantly were MA residents ages 45-64.

In contrast, hospital stay rates for nonfatal self-inflicted injuries *decreased* 2.8% per year among MA teens ages 15-19.

There was no significant change in the overall rate of ED visits for nonfatal self-inflicted injuries between 2002 and 2009.

Two specific age groups, however, did experience increased ED visit rates for self-inflicted injuries; rates increased 8.6% per year among MA residents ages 65-75 and 2.4% per year among residents ages 45-64.

1. Rates for age groups are age-specific (i.e., number of cases per 100,000 persons in that age group). 2009 rates are based on population data from 2009 U.S. Census Estimates.

2. Rates for total counts are crude rates per 100,000 persons. Totals includes cases for which age was unknown or missing.

3. Average Annual Percent Change (AAPC) between 2002 and 2009. AAPC only presented if statistically significant at  $p < .05$ ; n.s. = not significant.

Rates are suppressed for nonfatal injuries with counts of less than 7 and for deaths with counts less than 5. Rates based on counts less than 20 may be unstable.

Sources: Deaths - Registry of Vital Records and Statistics, MDPH. Nonfatal Injuries - MA Inpatient Hospital Discharge Database, MA Outpatient Observation Database, and MA Outpatient Emergency Department Database, Division of Health Care Finance and Policy

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**Table 18. Homicide and Assault-related Injury Rates<sup>1</sup> by Age Group, MA Residents, 2002-2009**

| Deaths                  | 2002    | 2003    | 2004    | 2005    | 2006    | 2007    | 2008    | 2009    | Annual % Change <sup>3</sup> |
|-------------------------|---------|---------|---------|---------|---------|---------|---------|---------|------------------------------|
| <1 year                 | --      | --      | --      | --      | --      | --      | 0.0     | --      | --                           |
| 1-14 years              | 0.9     | 0.7     | 0.6     | --      | 0.5     | 1.5     | --      | 0.5     | --                           |
| 15-19 years             | 5.6     | 3.7     | 7.2     | 7.4     | 5.5     | 5.5     | 5.6     | 5.2     | n.s.                         |
| 20-24 years             | 9.3     | 7.3     | 11.0    | 10.9    | 10.0    | 10.6    | 8.0     | 9.3     | n.s.                         |
| 25-44 years             | 3.8     | 2.7     | 3.2     | 3.6     | 4.2     | 3.6     | 4.1     | 4.1     | n.s.                         |
| 45-64 years             | 1.7     | 1.2     | 1.2     | 0.9     | 1.4     | 1.3     | 1.5     | 1.2     | n.s.                         |
| 65-74 years             | 1.2     | --      | --      | 1.7     | 1.5     | --      | --      | 1.6     | --                           |
| 75-84 years             | --      | --      | --      | --      | 0.0     | --      | 0.0     | --      | --                           |
| 85+ years               | --      | --      | 0.0     | --      | --      | 0.0     | 0.0     | --      | --                           |
| Total <sup>2</sup>      | 2.9     | 2.2     | 2.7     | 2.8     | 2.8     | 2.8     | 2.6     | 2.7     | n.s.                         |
| Nonfatal Hospital Stays | 2002    | 2003    | 2004    | 2005    | 2006    | 2007    | 2008    | 2009    | Annual % Change <sup>3</sup> |
| <1 year                 | 50.3    | 48.3    | 34.7    | 39.6    | 25.2    | 35.7    | 59.8    | 60.9    | n.s.                         |
| 1-14 years              | 5.9     | 4.0     | 5.8     | 5.3     | 5.2     | 5.3     | 6.0     | 5.3     | n.s.                         |
| 15-19 years             | 70.6    | 67.4    | 71.2    | 92.4    | 82.7    | 82.7    | 80.6    | 64.1    | n.s.                         |
| 20-24 years             | 94.0    | 92.4    | 96.0    | 107.8   | 109.7   | 101.6   | 100.4   | 100.1   | n.s.                         |
| 25-44 years             | 42.1    | 46.4    | 46.6    | 50.7    | 52.7    | 53.3    | 55.7    | 58.9    | +4.5%                        |
| 45-64 years             | 17.3    | 18.9    | 19.1    | 21.6    | 24.1    | 22.8    | 26.1    | 28.5    | +7.1%                        |
| 65-74 years             | 7.5     | 8.5     | 5.4     | 7.6     | 6.1     | 8.7     | 11.0    | 9.8     | n.s.                         |
| 75-84 years             | 5.9     | 6.9     | 9.5     | 8.9     | 6.5     | 8.2     | 9.0     | 7.3     | n.s.                         |
| 85+ years               | 15.5    | 7.9     | 6.2     | --      | 12.5    | 8.6     | 8.4     | 13.4    | n.s.                         |
| Total <sup>2</sup>      | 30.5    | 31.5    | 32.1    | 36.3    | 36.8    | 36.3    | 38.3    | 38.2    | +3.6%                        |
| Nonfatal ED Visits      | 2002    | 2003    | 2004    | 2005    | 2006    | 2007    | 2008    | 2009    | Annual % Change <sup>3</sup> |
| <1 year                 | 21.4    | 38.1    | 24.4    | 21.1    | 31.8    | 26.5    | 19.1    | 27.2    | n.s.                         |
| 1-14 years              | 139.4   | 137.3   | 131.9   | 125.8   | 134.7   | 121.4   | 118.8   | 111.2   | -2.9%                        |
| 15-19 years             | 1,020.7 | 1,028.4 | 965.1   | 925.7   | 986.7   | 958.6   | 895.1   | 867.6   | -2.1%                        |
| 20-24 years             | 1,219.9 | 1,168.0 | 1,159.7 | 1,090.1 | 1,145.7 | 1,197.3 | 1,144.6 | 1,190.9 | n.s.                         |
| 25-44 years             | 550.4   | 547.6   | 532.8   | 536.4   | 553.0   | 575.4   | 578.5   | 585.2   | +1.2%                        |
| 45-64 years             | 181.8   | 178.0   | 175.6   | 171.8   | 186.9   | 205.1   | 207.1   | 209.2   | +2.8%                        |
| 65-74 years             | 36.8    | 37.6    | 31.0    | 34.5    | 26.8    | 37.8    | 33.6    | 39.7    | n.s.                         |
| 75-84 years             | 18.5    | 21.7    | 19.3    | 22.0    | 18.8    | 18.7    | 25.4    | 16.9    | n.s.                         |
| 85+ years               | 24.4    | 20.5    | 16.3    | 15.1    | 16.1    | 19.3    | 16.8    | 18.3    | n.s.                         |
| Total <sup>2</sup>      | 387.6   | 382.8   | 371.2   | 363.1   | 380.7   | 391.1   | 383.7   | 383.1   | n.s.                         |

Between 2002 and 2009 there were no significant changes in the overall MA homicide rate or in the rates for any of the age groups analyzed.

The overall rate of hospital stays for nonfatal assaults increased 3.6% per year between 2002 and 2009.

Hospital stay rates for assaults increased significantly among two age groups; MA residents ages 45-64 (7.1% per year increase) and residents ages 25-44 (4.5% per year increase).

Between 2002 and 2009, ED visit rates for nonfatal assaults decreased among MA children ages 1-14 (2.9% per year) and teens ages 15-19 (2.1% per year).

On the other hand, such rates increased among adults ages 45-64 (2.8% per year increase) and 25-44 years (1.2% per year increase) over this time period.

1. Rates for age groups are age-specific (i.e., number of cases per 100,000 persons in that age group). 2009 rates are based on population data from 2009 U.S. Census Estimates.

2. Rates for total counts are crude rates per 100,000 persons. Totals includes cases for which age was unknown or missing.

3. Average Annual Percent Change (AAPC) between 2002 and 2009. AAPC only presented if statistically significant at  $p < .05$ ; n.s. = not significant.

Rates are suppressed for nonfatal injuries with counts of less than 7 and for deaths with counts less than 5. Rates based on counts less than 20 may be unstable.

Sources: Deaths - Registry of Vital Records and Statistics, MDPH. Nonfatal Injuries - MA Inpatient Hospital Discharge Database, MA Outpatient Observation Database, and MA Outpatient Emergency Department Database, Division of Health Care Finance and Policy

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# APPENDIX A

## Recommended Framework of E-code Groupings for Presenting Injury Morbidity Data\*

| Mechanism/Cause                             | Intent   |                                    |  |                                 |   |
|---|--|------------------------------------|--|---------------------------------|---|
|   | Unintentional  | Self-inflicted                     | Assault  | Undetermined                    | Other   |
| Cut/pierce                                  | E920.0-.9<br>E830.0-.9, E832.0-.9  | E956<br>E954                       | E966<br>E964   | E986<br>E984                    | E974  |
| Drowning/submersion                         | E970.0-.9  |                                    |  |                                 |   |
| Fall  | E880.0-E886.9, E888  | E957.0-.9                          | E968.1   | E987.0-.9                       |   |
| Fire/burn: Fire/flame                       | E890.0-E899  | E958.1                             | E968.0, E979.3   | E988.1                          |   |
| Fire/burn: Hot object/substance             | E924.0-.9  | E958.2,.7                          | E961, E968.3   | E988.2,.7                       |   |
| Firearm                                     | E922.0-.3, 8, 9  | E955.0-.4                          | E965.0-4, E979.4   | E985.0-.4                       | E970  |
| Machinery                                   | E979 (.0-.9)   |                                    |  |                                 |   |
| Motor vehicle traffic                       | E870-E819 (.0-.9)  | E958.5                             | E968.5   | E988.5                          |   |
| Occupant                                    | E870-E819 (.0, 1)  |                                    |  |                                 |   |
| Motorcyclist                                | E870-E819 (.2, 3)  |                                    |  |                                 |   |
| Pedal cyclist                               | E870-E819 (.6)   |                                    |  |                                 |   |
| Pedestrian                                  | E870-E819 (.7)   |                                    |  |                                 |   |
| Unspecified                                 | E870-E819 (.9)   |                                    |  |                                 |   |
|   | E800-E807 (.3)   |                                    |  |                                 |   |
| Pedal cyclist, other                        | E820-E825 (.6), E826.1,.9<br>E827-E829 (.1)  |                                    |  |                                 |   |
|   | E800-807 (.2)  |                                    |  |                                 |   |
| Pedestrian, other                           | E820-E825 (.7)<br>E826-E829 (.0)   |                                    |  |                                 |   |
|   | E800-E807 (.0, 1, 8, 9)<br>E820-E825 (.0-5, 8, 9)<br>E826.2-.8<br>E827-E829 (.2-.9),<br>E831.0-.9, E833.0-<br>E845.9     | E958.6                             |  | E988.6                          |   |
| Transport, other                            |  |                                    |  |                                 |   |
|   | E900.0-E909, E928.0-.2   | E958.3                             |  | E988.3                          |   |
| Natural/environmental                       | E906.0   |                                    |  |                                 |   |
| Dog bites                                   | E927.0-.4, 8-.9  |                                    |  |                                 |   |
| Overexertion                                | E850.0-E869.9  | E950.0-E952.9                      | E962.0-.9; E979.6,.7   | E980.0-E982.9                   | E972  |
| Poisoning                                   | E976-E977.9  |                                    | E960.0; E968.2   |                                 | E973, E975  |
| Struck by, against                          | E911-E913.9  | E953.0-.9                          | E963   | E983.0-.9                       |   |
| Suffocation                                 | E846-E848, E914-E915,<br>E918, E921(.0-.9), E922(.4,<br>.5), E923(.0-.9), E925.0-<br>E926.9, E928(.3-6), E929(.0-<br>.5) | E955(.5, 6, 7, .9),<br>E958(.0, 4) | E960.1, E965(.5-.9),<br>E967(.0-.9),<br>E968(.4, 6, .7),<br>E979(.0-.2), E979(.5-<br>.9) | E985(.5, 6, .7),<br>E988(.0, 4) | E971, E978, E990.0-<br>E994.9, E995.0-<br>E995.4, E996.0-<br>E996.3, E997(.0-.2),<br>E998 (.0-.1) |
| Other specified and classifiable            |  |                                    |  |                                 |   |
| Other specified, not elsewhere classifiable | E928.8, E929.8   | E958.8, E959                       | E968.8, E969, E999.1   | E988.8, E989                    | E977, E995.8,<br>E997.8, E998.8,<br>E999 (.2-.9)  |
| Unspecified                                 | E887, E928.9, E929.9   | E958.9                             | E968.9   | E988.9                          | E976, E995.9,<br>E996.9, E997.9,<br>E998.9  |
| Adverse effects: Medical care               |  |                                    |  |                                 | E870-E879   |
| Adverse effects: Drugs                      |  |                                    |  |                                 | E930.0-E949.9   |
| All injury by Intent                        | E800-E869, E880-E929   | E950-E959                          | E960-E969, <b>E979</b> ,<br>E999.1   | E980-E989                       | E970-E978, E990-<br>E999  |
| All external causes                         | E800-E999  |                                    |  |                                 |   |

\*Modified version of the CDC Recommended E-Code Groupings for Presenting Injury Morbidity, National Center for Injury Prevention and Control, Centers for Disease Control and Prevention.

## APPENDIX B

| Recommended Framework of E-Code Groupings for Presenting Injury Mortality Data* |   |                                |                                     |                       |                                   |  |
|---|---|--------------------------------|-------------------------------------|-----------------------|-----------------------------------|--|
| Mechanism/Cause   | Intent  |                                |                                     |                       |                                   |  |
|   | Unintentional   | Self-inflicted                 | Assault                             | Undetermined          | Other                             |  |
| Cut/pierce  | W25-W29, W45  | X78                            | X99                                 | Y28                   | Y35.4                             |  |
| Drowning/submersion   | W65-W74   | X71                            | X92                                 | X21                   |                                   |  |
| Fall  | W00-W19   | X80                            | Y01                                 | Y30                   |                                   |  |
| Fire/burn: Fire/flame   | X00-X09   | X76                            | X97, U01.3                          | Y26                   | Y36.3                             |  |
| Fire/burn: Hot object/substance   | X10-X19   | X77                            | X98                                 | Y27                   |                                   |  |
| Firearm   | W32-W34   | X72-X74                        | X93-X95, U01.4                      | Y22-Y24               | Y35.0                             |  |
| Machinery   | W24, W30-W31  |                                |                                     |                       |                                   |  |
| Motor vehicle traffic:  |   |                                |                                     |                       |                                   |  |
| Occupant  | V30-V79 (.4-.9), V83-V86 (.0-.3)  |                                |                                     |                       |                                   |  |
| Motorcyclist  | V20-V28 (.3-.9), V29 (.4-.9)  |                                |                                     |                       |                                   |  |
| Pedal cyclist   | V12-V14 (.3-.9), V19 (.4-.6)  |                                |                                     |                       |                                   |  |
| Pedestrian  | V02-V04 (.1-.9), V09.2  |                                |                                     |                       |                                   |  |
| Other   | V80 (.3-.5), V81.1, V82.1   |                                |                                     |                       |                                   |  |
| Unspecified   | V87 (.0-.8), V89.2  |                                |                                     |                       |                                   |  |
| Pedal cyclist, other  | V10-V11, V12-V14 (.0-.2), V15-V18, V19 (.0-.3, .8, .9)  |                                |                                     |                       |                                   |  |
| Pedestrian, other   | V01, V02-V04 (.0), V05, V06, V09 (.0, .1, .3, .9)   |                                |                                     |                       |                                   |  |
| Land Transport, other   | V20-V28 (.0-.2), V29 (.0-.3), V30-V79 (.0-.3), V80 (.0-.2, .6-.9), V81-V82 (.0, .2-.9), V83-V86 (.4-.9), V87.9, V88 (.0-.9), V89 (.0, .1, .3, .9) | X82                            | Y03                                 | Y32                   |                                   |  |
| Transport, other  | V90-V99   |                                | U01.1                               |                       | Y36.1                             |  |
| Natural/environmental   | W42-W43, W53-W64, W92-W99, X20-X39, X51-X57   |                                |                                     |                       |                                   |  |
| Overexertion  | X50   |                                |                                     |                       |                                   |  |
| Poisoning   | X40-X49   | X60-X69                        | X85-X90, U01(.6, .7)                | Y10-Y19               | Y35.2                             |  |
| Struck by, against  | W20-W22, W50-W52  | X79                            | Y00, Y04                            | Y29                   | Y35.3                             |  |
| Suffocation   | W75-W84   | X70                            | X91                                 | Y20                   |                                   |  |
| Other specified and classifiable  | W23, W35-W41, W44, W49, W85-W91, Y85  | X75, X81, U03.0                | X96, Y02, Y05-Y07, U01 (.0, .2, .5) | Y25-Y31               | Y35 (.1, .5), Y36 (.0, .2, .4-.8) |  |
| Other specified, not elsewhere classifiable                                     | X58, Y86  | X83, Y87.0                     | Y08, Y87.1, U01.8, U02              | Y33, Y87.2            | Y35.6, Y89 (.0, .1)               |  |
| Unspecified   | X59   | X84, U03.9                     | Y09, U01.9                          | Y34, Y89.9            | Y35.7, Y36.9                      |  |
| Adverse effects: Medical care   |   |                                |                                     |                       | Y40-Y59, Y88.0                    |  |
| Adverse effects: Drugs  |   |                                |                                     |                       | Y60-Y84, Y88 (.1-.3)              |  |
| All injury by intent  | V01-X59, Y85-Y86  | X60-X84, Y87.0, U03            | X85-Y09, Y87.1, U01, U02            | Y10-Y34, Y87.2, Y89.9 | Y35-Y36, Y89.0, Y89.1             |  |
| All external causes   |   | V01-Y36, Y85-Y87, Y89, U01-U03 |                                     |                       |                                   |  |

\*CDC Recommended E-Code Groupings for Presenting Injury Mortality, National Center for Injury Prevention and Control, Centers for Disease Control and Prevention.

## APPENDIX C

### Interpretation of Selected E-Codes

The following list provides sample scenarios to assist with the interpretation of ICD9 External Cause of Injury codes. This is *not* a comprehensive listing.

| Mechanism/Cause  | Intent          | ICD-9 E Codes                                   | Sample   |
|--|-----------------|---|--|
| Fall   | Assault-Related | E968.1  | Pushed down a flight of stairs.  |
|  | Self-Inflicted  | E957.0-E957.9                                   | Jumped off building with intent to harm self.  |
|  | Unintentional   | E880.0-E886.9, E888                             | Fell from bed. Tripped down stairs. Slipped on ice. Fell during football game.   |
| Fire/Burn  | Assault-Related | E961, E968.0, E968.3                            | Purposely burned by boiling water thrown by another person.  |
|  | Self-Inflicted  | E958.1, E958.2, 958.7                           | Purposely burned oneself with cigarette.   |
|  | Unintentional   | E890.0-E899, E924.0-E924.9                      | Spilled hot coffee. Burned on stove. Burned in bath water that was too hot.  |
| Motor Vehicle Traffic -Motorcycle  | Unintentional   | E810-E819(.2, .3)                               | Rider injured in crash with truck. Motorcycle slid on gravel.  |
| Motor Vehicle Traffic -Occupant  | Self-Inflicted  | E958.5  | Driver purposely ran into telephone pole.  |
| Motor Vehicle Traffic -Occupant  | Unintentional   | E810-E819(.0, .1)                               | Car rear-ended at stop sign. Head on collision with another car. .0 indicates driver, .1 indicates passenger.  |
| Motor Vehicle Traffic -Unspecified   | Unintentional   | E810-E819(.8, .9)                               | Injury to someone involved in motor vehicle crash but unknown if occupant, or other person.  |
| Overexertion   | Unintentional   | E927  | Pulled muscle during sports. Twisted ankle walking down stairs. Injured back lifting heavy boxes.  |
| Pedal Cycle: motor vehicle &   | Unintentional   | E810-E819(.6)<br>E800-E807(.3)<br>E820-E825(.6) | Injury to pedal cyclist hit by a car while riding bike in the street.  |
|  | Unintentional   | E826.1<br>E826.9<br>E827-E829(.1)               | Fell off bike on mountain trail. Ran into a pedestrian on the sidewalk (pedestrian injured). Ran into a dog with tricycle (pedal cyclist injured).                         |
| Pedestrian: motor vehicle &  | Unintentional   | E810-E819(.7)<br>E800-E807(.2)                  | Pedestrian hit by car while walking across street.   |
| non-motor vehicle-related  | Unintentional   | E820-E825(.7)<br>E826-E829(.0)                  | Collision with bicycle courier. Run over by three-wheeler.   |
| Poisoning/overdose   | Assault-Related | E962.0-E962.9                                   | Served a drink intentionally laced with drug.  |
|  | Self-Inflicted  | E950.0-E952.9                                   | Purposely breathed exhaust fumes from car.   |
|  | Unintentional   | E850.0-E869.9                                   | Intentional overdose of sleeping pills.  |
|  | Unintentional   |   | Child drank cleanser from bottle under sink.   |
| Nature/Environment: (e.g., animal bites, insect stings, exposure to cold/heat, earthquake, etc.) | Unintentional   | E905.0-E905.6<br>E905.9<br>E906.0-.5<br>E906.9  | Unknowingly ate poisonous mushroom.<br>Bitten by any animal, including dog, cat, rat, or snake, etc.. Bitten or stung by an insect, including bee, wasp, spider, scorpion. |
| Struck by/against  | Unintentional   | E916-918  | Struck by falling box. Crushed fingers in car door. Collided with another player during football game.   |
| Suffocation/hanging  | Assault-Related | E963  | Strangled by another person.   |
|  | Self-Inflicted  | E953.0-E953.9                                   | Hanged self.   |
|  | Unintentional   | E911-E913.9                                     | Choked on piece of meat.   |

## Appendix D. City and Town Listing by County:

[Return to Table 9](#)

| <a href="#">Barnstable</a> | <a href="#">Berkshire (cont.)</a> | <a href="#">Essex</a> | <a href="#">Franklin</a> | <a href="#">Hampden (cont.)</a> | <a href="#">Middlesex (cont.)</a> | <a href="#">Nantucket</a> | <a href="#">Plymouth (cont.)</a> | <a href="#">Worcester (cont.)</a> |
|----------------------------|-----------------------------------|-----------------------|--------------------------|---------------------------------|-----------------------------------|---------------------------|----------------------------------|-----------------------------------|
| BARNSTABLE                 | W. STOCKBRIDGE                    | AMESBURY              | ASHFIELD                 | WALES                           | DUNSTABLE                         | NANTUCKET                 | KINGSTON                         | HOLDEN                            |
| BOURNE                     | WILLIAMSTOWN                      | ANDOVER               | BERNARDSTON              | WEST SPRINGFIELD                | EVERETT                           |                           | LAKEVILLE                        | HOPEDALE                          |
| BREWSTER                   | WINDSOR                           | BEVERLY               | BUCKLAND                 | WESTFIELD                       | FRAMINGHAM                        | <a href="#">Norfolk</a>   | MARION                           | HUBBARDSTON                       |
| CHATHAM                    |                                   | BOXFORD               | CHARLEMONT               | WILBRAHAM                       | GROTON                            | AVON                      | MARSHFIELD                       | LANCASTER                         |
| DENNIS                     | <a href="#">Bristol</a>           | DANVERS               | COLRAIN                  | SPRINGFIELD                     | HOLLISTON                         | BELLINGHAM                | MATTAPOISETT                     | LEICESTER                         |
| EASTHAM                    | ACUSHNET                          | ESSEX                 | CONWAY                   | TOLLAND                         | HOPKINTON                         | BRAINTREE                 | MIDDLEBOROUGH                    | LEOMINSTER                        |
| FALMOUTH                   | ATTLEBORO                         | GEORGETOWN            | DEERFIELD                |                                 | HUDSON                            | BROOKLINE                 | NORWELL                          | LUNENBURG                         |
| HARWICH                    | BERKLEY                           | GLOUCESTER            | ERVING                   | <a href="#">Hampshire</a>       | LEXINGTON                         | CANTON                    | PEMBROKE                         | MENDON                            |
| MASHPEE                    | DARTMOUTH                         | GROVELAND             | GILL                     | AMHERST                         | LINCOLN                           | COHASSET                  | PLYMOUTH                         | MILFORD                           |
| ORLEANS                    | DIGHTON                           | HAMILTON              | GREENFIELD               | BELCHERTOWN                     | LITTLETON                         | DEDHAM                    | PLYMPTON                         | MILLBURY                          |
| PROVINCETOWN               | EASTON                            | HAVERHILL             | HAWLEY                   | CHESTERFIELD                    | LOWELL                            | DOVER                     | ROCHESTER                        | MILLVILLE                         |
| SANDWICH                   | FAIRHAVEN                         | IPSWICH               | HEATH                    | CUMMINGTON                      | MALDEN                            | FOXBOROUGH                | ROCKLAND                         | NEW BRAINTREE                     |
| TRURO                      | FALL RIVER                        | LAWRENCE              | LEVERETT                 | EASTHAMPTON                     | MARLBOROUGH                       | FRANKLIN                  | SCITUATE                         | NORTH BROOKFIELD                  |
| WELLFLEET                  | FREETOWN                          | LYNN                  | LEYDEN                   | GOSHEN                          | MAYNARD                           | HOLBROOK                  | WAREHAM                          | NORTHBOROUGH                      |
| YARMOUTH                   | MANSFIELD                         | LYNNFIELD             | MONROE                   | GRANBY                          | MEDFORD                           | MEDFIELD                  | W. BRIDGEWATER                   | NORTHBRIDGE                       |
|                            | NEW BEDFORD                       | MANCHESTER            | MONTAGUE                 | HADLEY                          | MELROSE                           | MEDWAY                    | WHITMAN                          | OAKHAM                            |
| <a href="#">Berkshire</a>  | NORTH ATTLEBORO                   | MARBLEHEAD            | NEW SALEM                | HATFIELD                        | NATICK                            | MILLIS                    |                                  | OXFORD                            |
| ADAMS                      | NORTON                            | MERRIMAC              | NORTHFIELD               | HUNTINGTON                      | NEWTON                            | MILTON                    | <a href="#">Suffolk</a>          | PAXTON                            |
| ALFORD                     | RAYNHAM                           | METHUEN               | ORANGE                   | MIDDLEFIELD                     | NORTH READING                     | NEEDHAM                   | BOSTON                           | PETERSHAM                         |
| BECKET                     | REHOBOTH                          | MIDDLETON             | ROWE                     | NORTHAMPTON                     | PEPPERELL                         | NORFOLK                   | CHELSEA                          | PHILLIPSTON                       |
| CHESHIRE                   | SEEKONK                           | NAHANT                | SHELburne                | PELHAM                          | READING                           | NORWOOD                   | REVERE                           | PRINCETON                         |
| CLARKSBURG                 | SOMERSET                          | NEWBURY               | SHUTESBURY               | PLAINFIELD                      | SHERBORN                          | PLAINVILLE                | WINTHROP                         | ROYALSTON                         |
| DALTON                     | SWANSEA                           | NEWBURYPORT           | SUNDERLAND               | SOUTH HADLEY                    | SHIRLEY                           | QUINCY                    |                                  | RUTLAND                           |
| EGREMONT                   | TAUNTON                           | N. ANDOVER            | WARWICK                  | SOUTHAMPTON                     | SOMERVILLE                        | RANDOLPH                  | <a href="#">Worcester</a>        | SHREWSBURY                        |
| FLORIDA                    | WESTPORT                          | PEABODY               | WENDELL                  | WARE                            | STONEHAM                          | SHARON                    | ASHBURNHAM                       | SOUTHBOROUGH                      |
| GREAT BARRINGTON           |                                   | ROCKPORT              | WHATELY                  | WESTHAMPTON                     | STOW                              | STOUGHTON                 | ATHOL                            | SOUTHBRIDGE                       |
| HANCOCK                    | <a href="#">Dukes</a>             | ROWLEY                |                          | WILLIAMSBURG                    | SUDBURY                           | WALPOLE                   | AUBURN                           | SPENCER                           |
| HINSDALE                   | AQUINNAH                          | SALEM                 | <a href="#">Hampden</a>  | WORTHINGTON                     | TEWKSBURY                         | WELLESLEY                 | BARRE                            | STERLING                          |
| LANESBOROUGH               | CHILMARK                          | SALISBURY             | AGAWAM                   |                                 | TOWNSEND                          | WESTWOOD                  | BERLIN                           | STURBRIDGE                        |
| LEE                        | EDGARTOWN                         | SAUGUS                | BLANDFORD                | <a href="#">Middlesex</a>       | TYNGSBOROUGH                      | WEYMOUTH                  | BLACKSTONE                       | SUTTON                            |
| LENOX                      | GOSNOLD                           | SWAMPSCOTT            | BRIMFIELD                | ACTON                           | WAKEFIELD                         | WRENTHAM                  | BOLTON                           | TEMPLETON                         |
| MONTEREY                   | OAK BLUFFS                        | TOPSFIELD             | CHESTER                  | ARLINGTON                       | WALTHAM                           |                           | BOYLSTON                         | UPTON                             |
| MT WASHINGTON              | TISBURY                           | WENHAM                | CHICOPEE                 | ASHBY                           | WATERTOWN                         | <a href="#">Plymouth</a>  | BROOKFIELD                       | UXBRIDGE                          |
| NEW ASHFORD                | WEST TISBURY                      | WEST NEWBURY          | E. LONGMEADOW            | ASHLAND                         | WAYLAND                           | ABINGTON                  | CHARLTON                         | WARREN                            |
| NEW MARLBOROUGH            |                                   |                       | GRANVILLE                | AYER                            | WESTFORD                          | BRIDGEWATER               | CLINTON                          | WEBSTER                           |
| NORTH ADAMS                |                                   |                       | HAMPDEN                  | BEDFORD                         | WESTON                            | BROCKTON                  | DOUGLAS                          | WEST BOYLSTON                     |
| OTIS                       |                                   |                       | HOLLAND                  | BELMONT                         | WILMINGTON                        | CARVER                    | DUDLEY                           | WEST BROOKFIELD                   |
| PERU                       |                                   |                       | HOLYOKE                  | BILLERICA                       | WINCHESTER                        | DUXBURY                   | EAST BROOKFIELD                  | WESTBOROUGH                       |
| PITTSFIELD                 |                                   |                       | LONGMEADOW               | BOXBOROUGH                      | WOBURN                            | E. BRIDGEWATER            | FITCHBURG                        | WESTMINSTER                       |
| RICHMOND                   |                                   |                       | LUDLOW                   | BURLINGTON                      |                                   | HALIFAX                   | GARDNER                          | WINCHENDON                        |
| SANDISFIELD                |                                   |                       | MONSON                   | CAMBRIDGE                       |                                   | HANOVER                   | GRAFTON                          | WORCESTER                         |
| SAVOY                      |                                   |                       | MONTGOMERY               | CARLISLE                        |                                   | HANSON                    | HARDWICK                         |                                   |
| SHEFFIELD                  |                                   |                       | PALMER                   | CHELMSFORD                      |                                   | HINGHAM                   | HARVARD                          |                                   |
| STOCKBRIDGE                |                                   |                       | RUSSELL                  | CONCORD                         |                                   | HULL                      |                                  |                                   |
| TYRINGHAM                  |                                   |                       | SOUTHWICK                | DRACUT                          |                                   |                           |                                  |                                   |
| WASHINGTON                 |                                   |                       |                          |                                 |                                   |                           |                                  |                                   |

## Appendix E. City and Town Listing by Community Health Network Area (CHNA)

[Return to Table 11](#)

|                        |                                    |                                    |                         |                         |                         |                         |                                     |
|------------------------|------------------------------------|------------------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------------------|
| <a href="#">CHNA 1</a> | <a href="#">CHNA 2 (continued)</a> | <a href="#">CHNA 5 (continued)</a> | <a href="#">CHNA 9</a>  | <a href="#">CHNA 13</a> | <a href="#">CHNA 18</a> | <a href="#">CHNA 23</a> | <a href="#">CHNA 27 (continued)</a> |
| ADAMS                  | ROYALSTON                          | WALES                              | ASHBURNHAM              | BEVERLY                 | DEDHAM                  | CARVER                  | FALMOUTH                            |
| ALFORD                 | SHELBURNE                          | WARREN                             | ASHBY                   | ESSEX                   | DOVER                   | DUXBURY                 | GOSNOLD                             |
| BECKET                 | SHUTESBURY                         | WEBSTER                            | AYER                    | GLOUCESTER              | NEEDHAM                 | HALIFAX                 | HARWICH                             |
| CHESHIRE               | SUNDERLAND                         | WEST BROOKFIELD                    | BARRE                   | HAMILTON                | NEWTON                  | HANOVER                 | MASHPEE                             |
| CLARKSBURG             | WARWICK                            |                                    | BERLIN                  | IPSWICH                 | WALTHAM                 | HANSON                  | NANTUCKET                           |
| DALTON                 | WENDELL                            | <a href="#">CHNA 6</a>             | BOLTON                  | MANCHESTER              | WELLESLEY               | KINGSTON                | OAK BLUFFS                          |
| EGREMONT               | WHATELY                            | BELLINGHAM                         | CLINTON                 | ROCKPORT                | WESTON                  | MARSHFIELD              | ORLEANS                             |
| FLORIDA                |                                    | BLACKSTONE                         | FITCHBURG               | TOPSFIELD               | WESTWOOD                | PEMBROKE                | PROVINCETOWN                        |
| GREAT BARRINGTON       | <a href="#">CHNA 3</a>             | DOUGLAS                            | GARDNER                 | WENHAM                  |                         | PLYMOUTH                | SANDWICH                            |
| HANCOCK                | AMHERST                            | FRANKLIN                           | GROTON                  |                         | <a href="#">CHNA 19</a> | PLYMPTON                | TISBURY                             |
| HINSDALE               | BELCHERTOWN                        | HOPEDALE                           | HARDWICK                | <a href="#">CHNA 14</a> | BOSTON                  | ROCKLAND                | TRURO                               |
| LANESBOROUGH           | CHESTERFIELD                       | MEDWAY                             | HARVARD                 | DANVERS                 | BROOKLINE               |                         | WELLFLEET                           |
| LEE                    | CUMMINGTON                         | MENDON                             | HUBBARDSTON             | LYNN                    | CHELSEA                 | <a href="#">CHNA 24</a> | WEST TISBURY                        |
| LENOX                  | EASTHAMPTON                        | MILFORD                            | LANCASTER               | LYNNFIELD               | REVERE                  | ATTLEBORO               | YARMOUTH                            |
| MONTEREY               | GOSHEN                             | MILLVILLE                          | LEOMINSTER              | MARBLEHEAD              | WINTHROP                | BERKLEY                 |                                     |
| MOUNT WASHINGTON       | GRANBY                             | NORTHBRIDGE                        | LUNENBURG               | NAHANT                  |                         | DIGHTON                 |                                     |
| NEW ASHFORD            | HADLEY                             | SUTTON                             | NEW BRAINTREE           | PEABODY                 | <a href="#">CHNA 20</a> | LAKEVILLE               |                                     |
| NEW MARLBOROUGH        | HATFIELD                           | UPTON                              | OAKHAM                  | SALEM                   | BRAINTREE               | MANSFIELD               |                                     |
| NORTH ADAMS            | MIDDLEFIELD                        | UXBRIDGE                           | PEPPERELL               | SAUGUS                  | CANTON                  | MIDDLEBOROUGH           |                                     |
| OTIS                   | NORTHHAMPTON                       |                                    | PRINCETON               | SWAMPSCOTT              | COHASSET                | NORTH ATTLEBOROUGH      |                                     |
| PERU                   | PELHAM                             | <a href="#">CHNA 7</a>             | RUTLAND                 |                         | HINGHAM                 | NORTON                  |                                     |
| PITTSFIELD             | PLAINFIELD                         | ASHLAND                            | SHIRLEY                 | <a href="#">CHNA 15</a> | HULL                    | RAYNHAM                 |                                     |
| RICHMOND               | SOUTH HADLEY                       | FOXBOROUGH                         | STERLING                | ACTON                   | MILTON                  | REHOBOTH                |                                     |
| SANDSFIELD             | SOUTHAMPTON                        | FRAMINGHAM                         | TEMPLETON               | BEDFORD                 | NORWELL                 | SEEKONK                 |                                     |
| SAVOY                  | WARE                               | HOLLISTON                          | TOWNSEND                | BOXBOROUGH              | NORWOOD                 | TAUNTON                 |                                     |
| SHEFFIELD              | WESTHAMPTON                        | HOPKINTON                          | WESTMINSTER             | BURLINGTON              | QUINCY                  |                         |                                     |
| STOCKBRIDGE            | WILLIAMSBURG                       | HUDSON                             | WINCHENDON              | CARLISLE                | RANDOLPH                | <a href="#">CHNA 25</a> |                                     |
| TYRINGHAM              | WORTHINGTON                        | MARLBOROUGH                        |                         | CONCORD                 | SCITUATE                | FALL RIVER              |                                     |
| WASHINGTON             |                                    | MAYNARD                            | <a href="#">CHNA 10</a> | LEXINGTON               | SHARON                  | SOMERSET                |                                     |
| WEST STOCKBRIDGE       | <a href="#">CHNA 4</a>             | MEDFIELD                           | BILLERICA               | LINCOLN                 | WEYMOUTH                | SWANSEA                 |                                     |
| WILLIAMSTOWN           | AGAWAM                             | MILLIS                             | CHELMSFORD              | LITTLETON               |                         | WESTPORT                |                                     |
| WINDSOR                | BLANDFORD                          | NATICK                             | DRACUT                  | WILMINGTON              | <a href="#">CHNA 21</a> |                         |                                     |
|                        | EAST LONGMEADOW                    | NORFOLK                            | DUNSTABLE               | WINCHESTER              | CHESTER                 | <a href="#">CHNA 26</a> |                                     |
| <a href="#">CHNA 2</a> | GRANVILLE                          | NORTHBOROUGH                       | LOWELL                  | WOBURN                  | CHICOPEE                | ACUSHNET                |                                     |
| ASHFIELD               | HAMPDEN                            | PLAINVILLE                         | TEWKSBURY               |                         | HOLYOKE                 | DARTMOUTH               |                                     |
| ATHOL                  | LONGMEADOW                         | SHERBORN                           | TYNGSBOROUGH            | <a href="#">CHNA 16</a> | HUNTINGTON              | FAIRHAVEN               |                                     |
| BERNARDSTON            | MONSON                             | SOUTHBOROUGH                       | WESTFORD                | EVERETT                 | LUDLOW                  | FREETOWN                |                                     |
| BUCKLAND               | PALMER                             | STOW                               |                         | MALDEN                  | MONTGOMERY              | MARION                  |                                     |
| CHARLEMONT             | RUSSELL                            | SUDBURY                            | <a href="#">CHNA 11</a> | MEDFORD                 | WESTFIELD               | MATTAPOISETT            |                                     |
| COLRAIN                | SOUTHWICK                          | WALPOLE                            | ANDOVER                 | MELROSE                 |                         | NEW BEDFORD             |                                     |
| CONWAY                 | SPRINGFIELD                        | WAYLAND                            | LAWRENCE                | NORTH READING           | <a href="#">CHNA 22</a> | ROCHESTER               |                                     |
| DEERFIELD              | TOLLAND                            | WESTBOROUGH                        | METHUEN                 | READING                 | ABINGTON                | WAREHAM                 |                                     |
| ERVING                 | WEST SPRINGFIELD                   | WRENTHAM                           | MIDDLETON               | STONEHAM                | AVON                    |                         |                                     |
| GILL                   | WILBRAHAM                          |                                    | NORTH ANDOVER           | WAKEFIELD               | BRIDGEWATER             | <a href="#">CHNA 27</a> |                                     |
| GREENFIELD             |                                    | <a href="#">CHNA 8</a>             |                         |                         | BROCKTON                | AQUINNAH                |                                     |
| HAWLEY                 | <a href="#">CHNA 5</a>             | AUBURN                             | <a href="#">CHNA 12</a> | <a href="#">CHNA 17</a> | EAST BRIDGEWATER        | BARNSTABLE              |                                     |
| HEATH                  | BRIMFIELD                          | BOYLSTON                           | AMESBURY                | ARLINGTON               | EASTON                  | BOURNE                  |                                     |
| LEVERETT               | BROOKFIELD                         | GRAFTON                            | BOXFORD                 | BELMONT                 | HOLBROOK                | BREWSTER                |                                     |
| LEYDEN                 | CHARLTON                           | HOLDEN                             | GEORGETOWN              | CAMBRIDGE               | STOUGHTON               | CHATHAM                 |                                     |
| MONROE                 | DUDLEY                             | LEICESTER                          | GROVELAND               | SOMERVILLE              | WEST BRIDGEWATER        | CHILMARK                |                                     |
| MONTAGUE               | EAST BROOKFIELD                    | MILLBURY                           | HAVERHILL               | WATERTOWN               | WHITMAN                 | DENNIS                  |                                     |
| NEW SALEM              | HOLLAND                            | PAXTON                             | MERRIMAC                |                         |                         | EASTHAM                 |                                     |
| NORTHFIELD             | NORTH BROOKFIELD                   | SHREWSBURY                         | NEWBURY                 |                         |                         | EDGARTOWN               |                                     |
| ORANGE                 | OXFORD                             | WEST BOYLSTON                      | NEWBURYPORT             |                         |                         |                         |                                     |
| PETERSHAM              | SOUTHBRIDGE                        | WORCESTER                          | ROWLEY                  |                         |                         |                         |                                     |
| PHILLIPSTON            | SPENCER                            |                                    | SALISBURY               |                         |                         |                         |                                     |
| ROWE                   | STURBRIDGE                         |                                    | WEST NEWBURY            |                         |                         |                         |                                     |